the endogenous gene. The transgene may also be selectively introduced into a particular cell type, thus inactivating the endogenous gene in only that cell type, by following, for example, the teaching of Gu et al. (Gu et al., Science 265:103-106 (1994)). The regulatory sequences required for such a cell-type specific inactivation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art.

Once transgenic animals have been generated, the expression of the recombinant gene may be assayed utilizing standard techniques. Initial screening may be accomplished by Southern blot analysis or PCR techniques to analyze animal tissues to verify that integration of the transgene has taken place. The level of mRNA expression of the transgene in the tissues of the transgenic animals may also be assessed using techniques which include, but are not limited to, Northern blot analysis of tissue samples obtained from the animal, *in situ* hybridization analysis, and reverse transcriptase-PCR (rt-PCR). Samples of transgenic gene-expressing tissue may also be evaluated immunocytochemically or immunohistochemically using antibodies specific for the transgene product.

Once the founder animals are produced, they may be bred, inbred, outbred, or crossbred to produce colonies of the particular animal. Examples of such breeding strategies include, but are not limited to: outbreeding of founder animals with more than one integration site in order to establish separate lines; inbreeding of separate lines in order to produce compound transgenics that express the transgene at higher levels because of the effects of additive expression of each transgene; crossing of heterozygous transgenic animals to produce animals homozygous for a given integration site in order to both augment expression and eliminate the need for screening of animals by DNA analysis; crossing of separate homozygous lines to produce compound heterozygous or homozygous lines; and breeding to place the transgene on a distinct background that is appropriate for an experimental model of interest.

Transgenic animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 20: Knock-Out Animals

Endogenous gene expression can also be reduced by inactivating or "knocking out" the gene and/or its promoter using targeted homologous recombination. (*E.g.*, see Smithies et al., Nature 317:230-234 (1985); Thomas & Capecchi, Cell 51:503-512 (1987); Thompson et al., Cell 5:313-321 (1989); each of which is incorporated by reference herein in its entirety). For example, a mutant, non-functional polynucleotide of the invention (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous polynucleotide sequence (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express polypeptides of the invention *in vivo*. In another embodiment, techniques known in the art are used to generate knockouts in cells that contain, but do not express the gene of interest. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the targeted gene. Such approaches are particularly suited in research and agricultural fields where modifications to embryonic stem cells can be used to generate animal offspring with an inactive targeted gene (*e.g.*, see Thomas & Capecchi 1987 and Thompson 1989, *supra*). However this approach can be routinely adapted for use in humans provided the recombinant DNA constructs are directly administered or targeted to the required site *in vivo* using appropriate viral vectors that will be apparent to those of skill in the art.

In further embodiments of the invention, cells that are genetically engineered to express the polypeptides of the invention, or alternatively, that are genetically engineered not to express the polypeptides of the invention (e.g., knockouts) are administered to a patient *in vivo*. Such cells may be obtained from the patient (i.e., animal, including human) or an MHC compatible donor and can include, but are not limited to fibroblasts, bone marrow cells, blood cells (e.g., lymphocytes), adipocytes, muscle cells, endothelial cells etc. The cells are genetically engineered *in vitro* using recombinant DNA techniques to introduce the coding sequence of polypeptides of the invention into the cells, or alternatively, to disrupt the coding sequence and/or endogenous regulatory sequence associated with the polypeptides of the invention, e.g., by transduction (using viral vectors, and preferably vectors that integrate the transgene into the cell genome) or transfection procedures, including, but not limited to, the use of plasmids, cosmids, YACs, naked DNA, electroporation, liposomes, etc. The coding sequence of the polypeptides of the invention can be placed under the control of a strong constitutive or inducible promoter or promoter/enhancer to achieve expression, and

preferably secretion, of the polypeptides of the invention. The engineered cells which express and preferably secrete the polypeptides of the invention can be introduced into the patient systemically, e.g., in the circulation, or intraperitoneally.

Alternatively, the cells can be incorporated into a matrix and implanted in the body, e.g., genetically engineered fibroblasts can be implanted as part of a skin graft; genetically engineered endothelial cells can be implanted as part of a lymphatic or vascular graft. (See, for example, Anderson et al. U.S. Patent No. 5,399,349; and Mulligan & Wilson, U.S. Patent No. 5,460,959 each of which is incorporated by reference herein in its entirety).

When the cells to be administered are non-autologous or non-MHC compatible cells, they can be administered using well known techniques which prevent the development of a host immune response against the introduced cells. For example, the cells may be introduced in an encapsulated form which, while allowing for an exchange of components with the immediate extracellular environment, does not allow the introduced cells to be recognized by the host immune system.

Transgenic and "knock-out" animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 22: Assays Detecting Stimulation or Inhibition of B cell Proliferation and Differentiation

Generation of functional humoral immune responses requires both soluble and cognate signaling between B-lineage cells and their microenvironment. Signals may impart a positive stimulus that allows a B-lineage cell to continue its programmed development, or a negative stimulus that instructs the cell to arrest its current developmental pathway. To date, numerous stimulatory and inhibitory signals have been found to influence B cell responsiveness including IL-2, IL-4, IL-5, IL-6, IL-7, IL10, IL-13, IL-14 and IL-15. Interestingly, these signals are by themselves weak effectors but can, in combination with various co-stimulatory proteins, induce activation, proliferation, differentiation, homing, tolerance and death among B cell populations.

One of the best studied classes of B-cell co-stimulatory proteins is the TNF-superfamily. Within this family CD40, CD27, and CD30 along with their respective ligands CD154, CD70, and CD153 have been found to regulate a variety of immune responses. Assays which allow for the detection and/or observation of the proliferation and differentiation of these B-cell populations and their precursors are valuable tools in determining the effects various proteins may have on these B-cell populations in terms of proliferation and differentiation. Listed below are two assays designed to allow for the detection of the differentiation, proliferation, or inhibition of B-cell populations and their precursors.

In Vitro Assay- Agonists or antagonists of the invention can be assessed for its ability to induce activation, proliferation, differentiation or inhibition and/or death in B-cell populations and their precursors. The activity of the agonists or antagonists of the invention on purified human tonsillar B cells, measured qualitatively over the dose range from 0.1 to 10,000 ng/mL, is assessed in a standard B-lymphocyte co-stimulation assay in which purified tonsillar B cells are cultured in the presence of either formalin-fixed Staphylococcus aureus Cowan I (SAC) or immobilized anti-human IgM antibody as the priming agent. Second signals such as IL-2 and IL-15 synergize with SAC and IgM crosslinking to elicit B cell proliferation as measured by tritiated-thymidine incorporation. Novel synergizing agents can be readily identified using this assay. The assay involves isolating human tonsillar B cells by magnetic bead (MACS) depletion of CD3-positive cells. The resulting cell population is greater than 95% B cells as assessed by expression of CD45R(B220).

Various dilutions of each sample are placed into individual wells of a 96-well plate to which are added 10^5 B-cells suspended in culture medium (RPMI 1640 containing 10% FBS, 5 X 10^{-5}M 2ME, 100U/ml penicillin, 10ug/ml streptomycin, and 10^{-5} dilution of SAC) in a total volume of 150ul. Proliferation or inhibition is quantitated by a 20h pulse (1uCi/well) with 3H-thymidine (6.7 Ci/mM) beginning 72h post factor addition. The positive and negative controls are IL2 and medium respectively.

In Vivo Assay- BALB/c mice are injected (i.p.) twice per day with buffer only, or 2 mg/Kg of agonists or antagonists of the invention, or truncated forms thereof. Mice receive this treatment for 4 consecutive days, at which time they are sacrificed and various tissues and serum collected for analyses. Comparison of H&E sections from normal spleens and spleens treated with agonists or antagonists of the invention identify the results of the activity

of the agonists or antagonists on spleen cells, such as the diffusion of peri-arterial lymphatic sheaths, and/or significant increases in the nucleated cellularity of the red pulp regions, which may indicate the activation of the differentiation and proliferation of B-cell populations. Immunohistochemical studies using a B cell marker, anti-CD45R(B220), are used to determine whether any physiological changes to splenic cells, such as splenic disorganization, are due to increased B-cell representation within loosely defined B-cell zones that infiltrate established T-cell regions.

Flow cytometric analyses of the spleens from mice treated with agonist or antagonist is used to indicate whether the agonists or antagonists specifically increases the proportion of ThB+, CD45R(B220)dull B cells over that which is observed in control mice.
Likewise, a predicted consequence of increased mature B-cell representation in vivo is a relative increase in serum Ig titers. Accordingly, serum IgM and IgA levels are compared between buffer and agonists or antagonists-treated mice.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 23: T Cell Proliferation Assay

A CD3-induced proliferation assay is performed on PBMCs and is measured by the uptake of ^{3}H-thymidine. The assay is performed as follows. Ninety-six well plates are coated with 100 µl/well of mAb to CD3 (HIT3a, Pharmingen) or isotype-matched control mAb (B33.1) overnight at 4 degrees C (1 µg/ml in .05M bicarbonate buffer, pH 9.5), then washed three times with PBS. PBMC are isolated by F/H gradient centrifugation from human peripheral blood and added to quadruplicate wells (5 x 10^4/well) of mAb coated plates in RPMI containing 10% FCS and P/S in the presence of varying concentrations of agonists or antagonists of the invention (total volume 200 ul). Relevant protein buffer and medium alone are controls. After 48 hr. culture at 37 degrees C, plates are spun for 2 min. at 1000 rpm and 100 µl of supernatant is removed and stored –20 degrees C for measurement of IL-2 (or other cytokines) if effect on proliferation is observed. Wells are supplemented with 100 ul of medium containing 0.5 uCi of ^{3}H-thymidine and cultured at 37 degrees C for 18-24 hr. Wells are harvested and incorporation of ^{3}H-thymidine used as a measure of proliferation.

Anti-CD3 alone is the positive control for proliferation. IL-2 (100 U/ml) is also used as a control which enhances proliferation. Control antibody which does not induce proliferation of T cells is used as the negative controls for the effects of agonists or antagonists of the invention.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 24: Effect of Agonists or Antagonists of the Invention on the Expression of MHC Class II, Costimulatory and Adhesion Molecules and Cell Differentiation of Monocytes and Monocyte-Derived Human Dendritic Cells

Dendritic cells are generated by the expansion of proliferating precursors found in the peripheral blood: adherent PBMC or elutriated monocytic fractions are cultured for 7-10 days with GM-CSF (50 ng/ml) and IL-4 (20 ng/ml). These dendritic cells have the characteristic phenotype of immature cells (expression of CD1, CD80, CD86, CD40 and MHC class II antigens). Treatment with activating factors, such as TNF-α, causes a rapid change in surface phenotype (increased expression of MHC class I and II, costimulatory and adhesion molecules, downregulation of FCγRII, upregulation of CD83). These changes correlate with increased antigen-presenting capacity and with functional maturation of the dendritic cells.

FACS analysis of surface antigens is performed as follows. Cells are treated 1-3 days with increasing concentrations of agonist or antagonist of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

Effect on the production of cytokines. Cytokines generated by dendritic cells, in particular IL-12, are important in the initiation of T-cell dependent immune responses. IL-12 strongly influences the development of Thl helper T-cell immune response, and induces cytotoxic T and NK cell function. An ELISA is used to measure the IL-12 release as follows. Dendritic cells (10^6/ml) are treated with increasing concentrations of agonists or antagonists of the

invention for 24 hours. LPS (100 ng/ml) is added to the cell culture as positive control. Supernatants from the cell cultures are then collected and analyzed for IL-12 content using commercial ELISA kit (e..g, R & D Systems (Minneapolis, MN)). The standard protocols provided with the kits are used.

Effect on the expression of MHC Class II, costimulatory and adhesion molecules. Three major families of cell surface antigens can be identified on monocytes: adhesion molecules, molecules involved in antigen presentation, and Fc receptor. Modulation of the expression of MHC class II antigens and other costimulatory molecules, such as B7 and ICAM-1, may result in changes in the antigen presenting capacity of monocytes and ability to induce T cell activation. Increase expression of Fc receptors may correlate with improved monocyte cytotoxic activity, cytokine release and phagocytosis.

FACS analysis is used to examine the surface antigens as follows. Monocytes are treated 1-5 days with increasing concentrations of agonists or antagonists of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degreesC. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

Monocyte activation and/or increased survival. Assays for molecules that activate (or alternatively, inactivate) monocytes and/or increase monocyte survival (or alternatively, decrease monocyte survival) are known in the art and may routinely be applied to determine whether a molecule of the invention functions as an inhibitor or activator of monocytes. Agonists or antagonists of the invention can be screened using the three assays described below. For each of these assays, Peripheral blood mononuclear cells (PBMC) are purified from single donor leukopacks (American Red Cross, Baltimore, MD) by centrifugation through a Histopaque gradient (Sigma). Monocytes are isolated from PBMC by counterflow centrifugal elutriation.

Monocyte Survival Assay. Human peripheral blood monocytes progressively lose viability when cultured in absence of serum or other stimuli. Their death results from internally regulated process (apoptosis). Addition to the culture of activating factors, such as TNF-alpha

dramatically improves cell survival and prevents DNA fragmentation. Propidium iodide (PI) staining is used to measure apoptosis as follows. Monocytes are cultured for 48 hours in polypropylene tubes in serum-free medium (positive control), in the presence of 100 ng/ml TNF-alpha (negative control), and in the presence of varying concentrations of the compound to be tested. Cells are suspended at a concentration of 2 x 10^6/ml in PBS containing PI at a final concentration of 5 μg/ml, and then incubaed at room temperature for 5 minutes before FACScan analysis. PI uptake has been demonstrated to correlate with DNA fragmentation in this experimental paradigm.

Effect on cytokine release. An important function of monocytes/macrophages is their regulatory activity on other cellular populations of the immune system through the release of cytokines after stimulation. An ELISA to measure cytokine release is performed as follows. Human monocytes are incubated at a density of 5x10^5 cells/ml with increasing concentrations of agonists or antagonists of the invention and under the same conditions, but in the absence of agonists or antagonists. For IL-12 production, the cells are primed overnight with IFN (100 U/ml) in presence of agonist or antagonist of the invention. LPS (10 ng/ml) is then added. Conditioned media are collected after 24h and kept frozen until use. Measurement of TNF-alpha, IL-10, MCP-1 and IL-8 is then performed using a commercially available ELISA kit (e. g, R & D Systems (Minneapolis, MN)) and applying the standard protocols provided with the kit.

Oxidative burst. Purified monocytes are plated in 96-w plate at 2-1x10^5 cell/well. Increasing concentrations of agonists or antagonists of the invention are added to the wells in a total volume of 0.2 ml culture medium (RPMI 1640 + 10% FCS, glutamine and antibiotics). After 3 days incubation, the plates are centrifuged and the medium is removed from the wells. To the macrophage monolayers, 0.2 ml per well of phenol red solution (140 mM NaCl, 10 mM potassium phosphate buffer pH 7.0, 5.5 mM dextrose, 0.56 mM phenol red and 19 U/ml of HRPO) is added, together with the stimulant (200 nM PMA). The plates are incubated at 37°C for 2 hours and the reaction is stopped by adding 20 μl 1N NaOH per well. The absorbance is read at 610 nm. To calculate the amount of H_2O_2 produced by the macrophages, a standard curve of a H_2O_2 solution of known molarity is performed for each experiment.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 25: Biological Effects of Agonists or Antagonists of the Invention

Astrocyte and Neuronal Assays.

Agonists or antagonists of the invention, expressed in *Escherichia coli* and purified as described above, can be tested for activity in promoting the survival, neurite outgrowth, or phenotypic differentiation of cortical neuronal cells and for inducing the proliferation of glial fibrillary acidic protein immunopositive cells, astrocytes. The selection of cortical cells for the bioassay is based on the prevalent expression of FGF-1 and FGF-2 in cortical structures and on the previously reported enhancement of cortical neuronal survival resulting from FGF-2 treatment. A thymidine incorporation assay, for example, can be used to elucidate an agonist or antagonist of the invention's activity on these cells.

Moreover, previous reports describing the biological effects of FGF-2 (basic FGF) on cortical or hippocampal neurons *in vitro* have demonstrated increases in both neuron survival and neurite outgrowth (Walicke et al., "Fibroblast growth factor promotes survival of dissociated hippocampal neurons and enhances neurite extension." *Proc. Natl. Acad. Sci. USA 83*:3012-3016. (1986), assay herein incorporated by reference in its entirety). However, reports from experiments done on PC-12 cells suggest that these two responses are not necessarily synonymous and may depend on not only which FGF is being tested but also on which receptor(s) are expressed on the target cells. Using the primary cortical neuronal culture paradigm, the ability of an agonist or antagonist of the invention to induce neurite outgrowth can be compared to the response achieved with FGF-2 using, for example, a thymidine incorporation assay.

Fibroblast and endothelial cell assays.

Human lung fibroblasts are obtained from Clonetics (San Diego, CA) and maintained in growth media from Clonetics. Dermal microvascular endothelial cells are obtained from

Cell Applications (San Diego, CA). For proliferation assays, the human lung fibroblasts and dermal microvascular endothelial cells can be cultured at 5,000 cells/well in a 96-well plate for one day in growth medium. The cells are then incubated for one day in 0.1% BSA basal medium. After replacing the medium with fresh 0.1% BSA medium, the cells are incubated with the test proteins for 3 days. Alamar Blue (Alamar Biosciences, Sacramento, CA) is added to each well to a final concentration of 10%. The cells are incubated for 4 hr. Cell viability is measured by reading in a CytoFluor fluorescence reader. For the PGE_2 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or agonists or antagonists of the invention with or without IL-1α for 24 hours. The supernatants are collected and assayed for PGE_2 by EIA kit (Cayman, Ann Arbor, MI). For the IL-6 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or with or without agonists or antagonists of the invention IL-1α for 24 hours. The supernatants are collected and assayed for IL-6 by ELISA kit (Endogen, Cambridge, MA).

Human lung fibroblasts are cultured with FGF-2 or agonists or antagonists of the invention for 3 days in basal medium before the addition of Alamar Blue to assess effects on growth of the fibroblasts. FGF-2 should show a stimulation at 10 - 2500 ng/ml which can be used to compare stimulation with agonists or antagonists of the invention.

Parkinson Models.

The loss of motor function in Parkinson's disease is attributed to a deficiency of striatal dopamine resulting from the degeneration of the nigrostriatal dopaminergic projection neurons. An animal model for Parkinson's that has been extensively characterized involves the systemic administration of 1-methyl-4 phenyl 1,2,3,6-tetrahydropyridine (MPTP). In the CNS, MPTP is taken-up by astrocytes and catabolized by monoamine oxidase B to 1-methyl-4-phenyl pyridine (MPP^+) and released. Subsequently, MPP^+ is actively accumulated in dopaminergic neurons by the high-affinity reuptake transporter for dopamine. MPP^+ is then concentrated in mitochondria by the electrochemical gradient and selectively inhibits nicotidamide adenine disphosphate: ubiquinone oxidoreductionase (complex I), thereby interfering with electron transport and eventually generating oxygen radicals.

It has been demonstrated in tissue culture paradigms that FGF-2 (basic FGF) has trophic activity towards nigral dopaminergic neurons (Ferrari et al., Dev. Biol. 1989). Recently, Dr. Unsicker's group has demonstrated that administering FGF-2 in gel foam implants in the striatum results in the near complete protection of nigral dopaminergic neurons from the toxicity associated with MPTP exposure (Otto and Unsicker, J. Neuroscience, 1990).

Based on the data with FGF-2, agonists or antagonists of the invention can be evaluated to determine whether it has an action similar to that of FGF-2 in enhancing dopaminergic neuronal survival *in vitro* and it can also be tested *in vivo* for protection of dopaminergic neurons in the striatum from the damage associated with MPTP treatment. The potential effect of an agonist or antagonist of the invention is first examined in vitro in a dopaminergic neuronal cell culture paradigm. The cultures are prepared by dissecting the midbrain floor plate from gestation day 14 Wistar rat embryos. The tissue is dissociated with trypsin and seeded at a density of 200,000 cells/cm^2 on polyorthinine-laminin coated glass coverslips. The cells are maintained in Dulbecco's Modified Eagle's medium and F12 medium containing hormonal supplements (N1). The cultures are fixed with paraformaldehyde after 8 days in vitro and are processed for tyrosine hydroxylase, a specific marker for dopminergic neurons, immunohistochemical staining. Dissociated cell cultures are prepared from embryonic rats. The culture medium is changed every third day and the factors are also added at that time.

Since the dopaminergic neurons are isolated from animals at gestation day 14, a developmental time which is past the stage when the dopaminergic precursor cells are proliferating, an increase in the number of tyrosine hydroxylase immunopositive neurons would represent an increase in the number of dopaminergic neurons surviving *in vitro*. Therefore, if an agonist or antagonist of the invention acts to prolong the survival of dopaminergic neurons, it would suggest that the agonist or antagonist may be involved in Parkinson's Disease.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 26: The Effect of Agonists or Antagonists of the Invention on the Growth of Vascular Endothelial Cells

On day 1, human umbilical vein endothelial cells (HUVEC) are seeded at 2-5x10^4 cells/35 mm dish density in M199 medium containing 4% fetal bovine serum (FBS), 16 units/ml heparin, and 50 units/ml endothelial cell growth supplements (ECGS, Biotechnique, Inc.). On day 2, the medium is replaced with M199 containing 10% FBS, 8 units/ml heparin. An agonist or antagonist of the invention, and positive controls, such as VEGF and basic FGF (bFGF) are added, at varying concentrations. On days 4 and 6, the medium is replaced. On day 8, cell number is determined with a Coulter Counter.

An increase in the number of HUVEC cells indicates that the compound of the invention may proliferate vascular endothelial cells, while a decrease in the number of HUVEC cell indicates that the compound of the invention inhibits vascular endothelial cells.

The studies described in this example tested activity of a polypeptide of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), agonists, and/or antagonists of the invention.

Example 27: Rat Corneal Wound Healing Model

This animal model shows the effect of an agonist or antagonist of the invention on neovascularization. The experimental protocol includes:

a) Making a 1-1.5 mm long incision from the center of cornea into the stromal layer.

b) Inserting a spatula below the lip of the incision facing the outer corner of the eye.

c) Making a pocket (its base is 1-1.5 mm form the edge of the eye).

d) Positioning a pellet, containing 50ng- 5ug of an agonist or antagonist of the invention, within the pocket.

e) Treatment with an agonist or antagonist of the invention can also be applied topically to the corneal wounds in a dosage range of 20mg - 500mg (daily treatment for five days).

The studies described in this example tested activity of agonists or antagonists of the

invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 28: Diabetic Mouse and Glucocorticoid-Impaired Wound Healing Models

A. Diabetic db+/db+ Mouse Model.

To demonstrate that an agonist or antagonist of the invention accelerates the healing process, the genetically diabetic mouse model of wound healing is used. The full thickness wound healing model in the db+/db+ mouse is a well characterized, clinically relevant and reproducible model of impaired wound healing. Healing of the diabetic wound is dependent on formation of granulation tissue and re-epithelialization rather than contraction (Gartner, M.H. *et al., J. Surg. Res. 52*:389 (1992); Greenhalgh, D.G. *et al., Am. J. Pathol. 136*:1235 (1990)).

The diabetic animals have many of the characteristic features observed in Type II diabetes mellitus. Homozygous (db+/db+) mice are obese in comparison to their normal heterozygous (db+/+m) littermates. Mutant diabetic (db+/db+) mice have a single autosomal recessive mutation on chromosome 4 (db+) (Coleman *et al. Proc. Natl. Acad. Sci. USA 77*:283-293 (1982)). Animals show polyphagia, polydipsia and polyuria. Mutant diabetic mice (db+/db+) have elevated blood glucose, increased or normal insulin levels, and suppressed cell-mediated immunity (Mandel *et al., J. Immunol. 120*:1375 (1978); Debray-Sachs, M. *et al., Clin. Exp. Immunol. 51(1)*:1-7 (1983); Leiter *et al., Am. J. of Pathol. 114*:46-55 (1985)). Peripheral neuropathy, myocardial complications, and microvascular lesions, basement membrane thickening and glomerular filtration abnormalities have been described in these animals (Norido, F. *et al., Exp. Neurol. 83(2)*:221-232 (1984); Robertson *et al., Diabetes 29(1)*:60-67 (1980); Giacomelli *et al., Lab Invest. 40(4)*:460-473 (1979); Coleman, D.L., *Diabetes 31 (Suppl)*:1-6 (1982)). These homozygous diabetic mice develop hyperglycemia that is resistant to insulin analogous to human type II diabetes (Mandel *et al., J. Immunol. 120*:1375-1377 (1978)).

The characteristics observed in these animals suggests that healing in this model may be similar to the healing observed in human diabetes (Greenhalgh, *et al., Am. J. of Pathol. 136*:1235-1246 (1990)).

Genetically diabetic female C57BL/KsJ (db+/db+) mice and their non-diabetic

(db+/+m) heterozygous littermates are used in this study (Jackson Laboratories). The animals are purchased at 6 weeks of age and are 8 weeks old at the beginning of the study. Animals are individually housed and received food and water ad libitum. All manipulations are performed using aseptic techniques. The experiments are conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

Wounding protocol is performed according to previously reported methods (Tsuboi, R. and Rifkin, D.B., *J. Exp. Med. 172*:245-251 (1990)). Briefly, on the day of wounding, animals are anesthetized with an intraperitoneal injection of Avertin (0.01 mg/mL), 2,2,2-tribromoethanol and 2-methyl-2-butanol dissolved in deionized water. The dorsal region of the animal is shaved and the skin washed with 70% ethanol solution and iodine. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is then created using a Keyes tissue punch. Immediately following wounding, the surrounding skin is gently stretched to eliminate wound expansion. The wounds are left open for the duration of the experiment. Application of the treatment is given topically for 5 consecutive days commencing on the day of wounding. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

Wounds are visually examined and photographed at a fixed distance at the day of surgery and at two day intervals thereafter. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

An agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology and immunohistochemistry. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

Three groups of 10 animals each (5 diabetic and 5 non-diabetic controls) are evaluated: 1) Vehicle placebo control, 2) untreated group, and 3) treated group.

Wound closure is analyzed by measuring the area in the vertical and horizontal axis and

obtaining the total square area of the wound. Contraction is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is 64mm^2, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using a Reichert-Jung microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds are used to assess whether the healing process and the morphologic appearance of the repaired skin is altered by treatment with an agonist or antagonist of the invention. This assessment included verification of the presence of cell accumulation, inflammatory cells, capillaries, fibroblasts, re-epithelialization and epidermal maturity (Greenhalgh, D.G. *et al., Am. J. Pathol. 136:*1235 (1990)). A calibrated lens micrometer is used by a blinded observer.

Tissue sections are also stained immunohistochemically with a polyclonal rabbit anti-human keratin antibody using ABC Elite detection system. Human skin is used as a positive tissue control while non-immune IgG is used as a negative control. Keratinocyte growth is determined by evaluating the extent of reepithelialization of the wound using a calibrated lens micrometer.

Proliferating cell nuclear antigen/cyclin (PCNA) in skin specimens is demonstrated by using anti-PCNA antibody (1:50) with an ABC Elite detection system. Human colon cancer served as a positive tissue control and human brain tissue is used as a negative tissue control. Each specimen included a section with omission of the primary antibody and substitution with non-immune mouse IgG. Ranking of these sections is based on the extent of proliferation on a scale of 0-8, the lower side of the scale reflecting slight proliferation to the higher side reflecting intense proliferation.

Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

B. Steroid Impaired Rat Model

The inhibition of wound healing by steroids has been well documented in various *in vitro* and *in vivo* systems (Wahl, Glucocorticoids and Wound healing. In: Anti-Inflammatory Steroid Action: Basic and Clinical Aspects. 280-302 (1989); Wahl*et al., J. Immunol. 115*: 476-481 (1975); Werb *et al., J. Exp. Med. 147*:1684-1694 (1978)). Glucocorticoids retard wound healing by inhibiting angiogenesis, decreasing vascular permeability (Ebert *et al., An. Intern. Med. 37*:701-705 (1952)), fibroblast proliferation, and collagen synthesis (Beck *et al., Growth Factors. 5:* 295-304 (1991); Haynes *et al., J. Clin. Invest. 61:* 703-797 (1978)) and producing a transient reduction of circulating monocytes (Haynes et al., *J. Clin. Invest. 61:* 703-797 (1978); Wahl, "Glucocorticoids and wound healing", *In:* Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989)). The systemic administration of steroids to impaired wound healing is a well establish phenomenon in rats (Beck *et al., Growth Factors. 5:* 295-304 (1991); Haynes *et al., J. Clin. Invest. 61:* 703-797 (1978); Wahl, "Glucocorticoids and wound healing", *In*: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989); Pierce *et al., Proc. Natl. Acad. Sci. USA 86*: 2229-2233 (1989)).

To demonstrate that an agonist or antagonist of the invention can accelerate the healing process, the effects of multiple topical applications of the agonist or antagonist on full thickness excisional skin wounds in rats in which healing has been impaired by the systemic administration of methylprednisolone is assessed.

Young adult male Sprague Dawley rats weighing 250-300 g (Charles River Laboratories) are used in this example. The animals are purchased at 8 weeks of age and are 9 weeks old at the beginning of the study. The healing response of rats is impaired by the systemic administration of methylprednisolone (17mg/kg/rat intramuscularly) at the time of wounding. Animals are individually housed and received food and water *ad libitum*. All manipulations are performed using aseptic techniques. This study is conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

The wounding protocol is followed according to section A, above. On the day of wounding, animals are anesthetized with an intramuscular injection of ketamine (50 mg/kg) and xylazine (5 mg/kg). The dorsal region of the animal is shaved and the skin washed with 70% ethanol and iodine solutions. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is created using a Keyes tissue punch. The

wounds are left open for the duration of the experiment. Applications of the testing materials are given topically once a day for 7 consecutive days commencing on the day of wounding and subsequent to methylprednisolone administration. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

Wounds are visually examined and photographed at a fixed distance at the day of wounding and at the end of treatment. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

The agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

Four groups of 10 animals each (5 with methylprednisolone and 5 without glucocorticoid) are evaluated: 1) Untreated group 2) Vehicle placebo control 3) treated groups.

Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total area of the wound. Closure is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is $64mm^2$, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using an Olympus microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds allows assessment of whether the healing process and the morphologic appearance of the repaired skin is improved by treatment with an agonist or

antagonist of the invention. A calibrated lens micrometer is used by a blinded observer to determine the distance of the wound gap.

Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 29: Lymphadema Animal Model

The purpose of this experimental approach is to create an appropriate and consistent lymphedema model for testing the therapeutic effects of an agonist or antagonist of the invention in lymphangiogenesis and re-establishment of the lymphatic circulatory system in the rat hind limb. Effectiveness is measured by swelling volume of the affected limb, quantification of the amount of lymphatic vasculature, total blood plasma protein, and histopathology. Acute lymphedema is observed for 7-10 days. Perhaps more importantly, the chronic progress of the edema is followed for up to 3-4 weeks.

Prior to beginning surgery, blood sample is drawn for protein concentration analysis. Male rats weighing approximately ~350g are dosed with Pentobarbital. Subsequently, the right legs are shaved from knee to hip. The shaved area is swabbed with gauze soaked in 70% EtOH. Blood is drawn for serum total protein testing. Circumference and volumetric measurements are made prior to injecting dye into paws after marking 2 measurement levels (0.5 cm above heel, at mid-pt of dorsal paw). The intradermal dorsum of both right and left paws are injected with 0.05 ml of 1% Evan's Blue. Circumference and volumetric measurements are then made following injection of dye into paws.

Using the knee joint as a landmark, a mid-leg inguinal incision is made circumferentially allowing the femoral vessels to be located. Forceps and hemostats are used to dissect and separate the skin flaps. After locating the femoral vessels, the lymphatic vessel that runs along side and underneath the vessel(s) is located. The main lymphatic vessels in this area are then electrically coagulated or suture ligated.

Using a microscope, muscles in back of the leg (near the semitendinosis and adductors) are bluntly dissected. The popliteal lymph node is then located. The 2 proximal

and 2 distal lymphatic vessels and distal blood supply of the popliteal node are then and ligated by suturing. The popliteal lymph node, and any accompanying adipose tissue, is then removed by cutting connective tissues.

Care is taken to control any mild bleeding resulting from this procedure. After lymphatics are occluded, the skin flaps are sealed by using liquid skin (Vetbond) (AJ Buck). The separated skin edges are sealed to the underlying muscle tissue while leaving a gap of ~0.5 cm around the leg. Skin also may be anchored by suturing to underlying muscle when necessary.

To avoid infection, animals are housed individually with mesh (no bedding). Recovering animals are checked daily through the optimal edematous peak, which typically occurred by day 5-7. The plateau edematous peak are then observed. To evaluate the intensity of the lymphedema, the circumference and volumes of 2 designated places on each paw before operation and daily for 7 days are measured. The effect plasma proteins on lymphedema is determined and whether protein analysis is a useful testing perimeter is also investigated. The weights of both control and edematous limbs are evaluated at 2 places. Analysis is performed in a blind manner.

Circumference Measurements: Under brief gas anesthetic to prevent limb movement, a cloth tape is used to measure limb circumference. Measurements are done at the ankle bone and dorsal paw by 2 different people then those 2 readings are averaged. Readings are taken from both control and edematous limbs.

Volumetric Measurements: On the day of surgery, animals are anesthetized with Pentobarbital and are tested prior to surgery. For daily volumetrics animals are under brief halothane anesthetic (rapid immobilization and quick recovery), both legs are shaved and equally marked using waterproof marker on legs. Legs are first dipped in water, then dipped into instrument to each marked level then measured by Buxco edema software(Chen/Victor). Data is recorded by one person, while the other is dipping the limb to marked area.

Blood-plasma protein measurements: Blood is drawn, spun, and serum separated prior to surgery and then at conclusion for total protein and Ca2+ comparison.

Limb Weight Comparison: After drawing blood, the animal is prepared for tissue collection. The limbs are amputated using a quillitine, then both experimental and control legs are cut at the ligature and weighed. A second weighing is done as the tibio-cacaneal joint is disarticulated and the foot is weighed.

Histological Preparations: The transverse muscle located behind the knee (popliteal) area is dissected and arranged in a metal mold, filled with freezeGel, dipped into cold methylbutane, placed into labeled sample bags at - 80EC until sectioning. Upon sectioning, the muscle is observed under fluorescent microscopy for lymphatics..

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 30: Suppression of TNF alpha-induced adhesion molecule expression by a Agonist or Antagonist of the Invention

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Tumor necrosis factor alpha (TNF-a), a potent proinflammatory cytokine, is a stimulator of all three CAMs on endothelial cells and may be involved in a wide variety of inflammatory responses, often resulting in a pathological outcome.

The potential of an agonist or antagonist of the invention to mediate a suppression of TNF-a induced CAM expression can be examined. A modified ELISA assay which uses ECs as a solid phase absorbent is employed to measure the amount of CAM expression on TNF-a treated ECs when co-stimulated with a member of the FGF family of proteins.

To perform the experiment, human umbilical vein endothelial cell (HUVEC) cultures are obtained from pooled cord harvests and maintained in growth medium (EGM-2; Clonetics, San Diego, CA) supplemented with 10% FCS and 1% penicillin/streptomycin in a 37 degree C humidified incubator containing 5% CO_2. HUVECs are seeded in 96-well

plates at concentrations of 1 x 10^4 cells/well in EGM medium at 37 degree C for 18-24 hrs or until confluent. The monolayers are subsequently washed 3 times with a serum-free solution of RPMI-1640 supplemented with 100 U/ml penicillin and 100 mg/ml streptomycin, and treated with a given cytokine and/or growth factor(s) for 24 h at 37 degree C. Following incubation, the cells are then evaluated for CAM expression.

Human Umbilical Vein Endothelial cells (HUVECs) are grown in a standard 96 well plate to confluence. Growth medium is removed from the cells and replaced with 90 ul of 199 Medium (10% FBS). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 ul volumes). Plates are incubated at 37 degree C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 µl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min.

Fixative is then removed from the wells and wells are washed 1X with PBS(+Ca,Mg)+0.5% BSA and drained. Do not allow the wells to dry. Add 10 µl of diluted primary antibody to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 µg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA.

Then add 20 µl of diluted ExtrAvidin-Alkaline Phosphotase (1:5,000 dilution) to each well and incubated at 37°C for 30 min. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA. 1 tablet of p-Nitrophenol Phosphate pNPP is dissolved in 5 ml of glycine buffer (pH 10.4). 100 µl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 µl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNNP reagent must then be added to each of the standard wells. The plate must be incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The results are quantified on a plate reader at 405 nm. The background subtraction option is used on blank wells filled with glycine buffer only. The template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

The studies described in this example tested activity of agonists or antagonists of the

invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 31: Production Of Polypeptide of the Invention For High-Throughput Screening Assays

The following protocol produces a supernatant containing polypeptide of the present invention to be tested. This supernatant can then be used in the Screening Assays described in Examples 33-42.

First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well (note: a 12-channel pipetter may be used with tips on every other channel). Aspirate off the Poly-D-Lysine solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

Plate 293T cells (do not carry cells past P+20) at 2 x 10^5 cells/well in .5ml DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing a polynucleotide insert, produced by the methods described in Examples 8-10, into an appropriately labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert should be transfected with each set of transfections.

Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on

PBS. First, person A aspirates off the media from four 24-well plates of cells, and then person B rinses each well with .5-1ml PBS. Person A then aspirates off PBS rinse, and person B, using a12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem I complex to the odd wells first, then to the even wells, to each row on the 24-well plates. Incubate at 37 degree C for 6 hours.

While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or HGS CHO-5 media (116.6 mg/L of CaCl2 (anhyd); 0.00130 mg/L $CuSO_4$-$5H_2O$; 0.050 mg/L of $Fe(NO_3)_3$-$9H_2O$; 0.417 mg/L of $FeSO_4$-$7H_2O$; 311.80 mg/L of Kcl; 28.64 mg/L of $MgCl_2$; 48.84 mg/L of $MgSO_4$; 6995.50 mg/L of NaCl; 2400.0 mg/L of $NaHCO_3$; 62.50 mg/L of NaH_2PO_4-H_20; 71.02 mg/L of Na_2HPO4; .4320 mg/L of $ZnSO_4$-$7H_2O$; .002 mg/L of Arachidonic Acid ; 1.022 mg/L of Cholesterol; .070 mg/L of DL-alpha-Tocopherol-Acetate; 0.0520 mg/L of Linoleic Acid; 0.010 mg/L of Linolenic Acid; 0.010 mg/L of Myristic Acid; 0.010 mg/L of Oleic Acid; 0.010 mg/L of Palmitric Acid; 0.010 mg/L of Palmitic Acid; 100 mg/L of Pluronic F-68; 0.010 mg/L of Stearic Acid; 2.20 mg/L of Tween 80; 4551 mg/L of D-Glucose; 130.85 mg/ml of L- Alanine; 147.50 mg/ml of L-Arginine-HCL; 7.50 mg/ml of L-Asparagine-H_20; 6.65 mg/ml of L-Aspartic Acid; 29.56 mg/ml of L-Cystine-2HCL-H_20; 31.29 mg/ml of L-Cystine-2HCL; 7.35 mg/ml of L-Glutamic Acid; 365.0 mg/ml of L-Glutamine; 18.75 mg/ml of Glycine; 52.48 mg/ml of L-Histidine-HCL-H_20; 106.97 mg/ml of L-Isoleucine; 111.45 mg/ml of L-Leucine; 163.75 mg/ml of L-Lysine HCL; 32.34 mg/ml of L-Methionine; 68.48 mg/ml of L-Phenylalainine; 40.0 mg/ml of L-Proline; 26.25 mg/ml of L-Serine; 101.05 mg/ml of L-Threonine; 19.22 mg/ml of L-Tryptophan; 91.79 mg/ml of L-Tryrosine-2Na-$2H_20$; and 99.65 mg/ml of L-Valine; 0.0035 mg/L of Biotin; 3.24 mg/L of D-Ca Pantothenate; 11.78 mg/L of Choline Chloride; 4.65 mg/L of Folic Acid; 15.60 mg/L of i-Inositol; 3.02 mg/L of Niacinamide; 3.00 mg/L of Pyridoxal HCL; 0.031 mg/L of Pyridoxine HCL; 0.319 mg/L of Riboflavin; 3.17 mg/L of Thiamine HCL; 0.365 mg/L of Thymidine; 0.680 mg/L of Vitamin B_{12}; 25 mM of HEPES Buffer; 2.39 mg/L of Na Hypoxanthine; 0.105 mg/L of Lipoic Acid; 0.081 mg/L of Sodium Putrescine-2HCL; 55.0 mg/L of Sodium Pyruvate; 0.0067 mg/L of Sodium Selenite; 20uM of Ethanolamine; 0.122 mg/L of Ferric Citrate; 41.70 mg/L of Methyl-B-Cyclodextrin complexed with Linoleic Acid; 33.33 mg/L of Methyl-B-Cyclodextrin complexed with Oleic Acid; 10 mg/L of Methyl-B-Cyclodextrin complexed with Retinal Acetate. Adjust

osmolarity to 327 mOsm) with 2mm glutamine and 1x penstrep. (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

The transfection reaction is terminated, preferably by tag-teaming, at the end of the incubation period. Person A aspirates off the transfection media, while person B adds 1.5ml appropriate media to each well. Incubate at 37 degree C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be used in the assays described in Examples 33-40.

It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide of the present invention directly (e.g., as a secreted protein) or by polypeptide of the present invention inducing expression of other proteins, which are then secreted into the supernatant. Thus, the invention further provides a method of identifying the protein in the supernatant characterized by an activity in a particular assay.

Example 32: Construction of GAS Reporter Construct

One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.

GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class I, cells after treatment with IL-12. Stat5 was originally called mammary growth factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.

The STATs are activated to translocate from the cytoplasm to the nucleus upon

tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks") family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2, and Jak3. These kinases display significant sequence similarity and are generally catalytically inactive in resting cells.

The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, Ann. Rev. Biochem. 64:621-51 (1995).) A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN-a, IFN-g, and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xxx-Trp-Ser (SEQ ID NO:1686)).

Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is encompassed in the Jaks-STATs signal transduction pathway.

Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway. (See Table below.) Thus, by using GAS elements linked to reporter molecules, activators of the Jaks-STATs pathway can be identified.

		JAKs			STATS	GAS(elements) or ISRE
Ligand	tyk2	Jak1	Jak2	Jak3		
IFN family						
IFN-a/B	+	+	-	-	1,2,3	ISRE
IFN-g (IRF1>Lys6>IFP)		+	+	-	1	GAS
Il-10	+	?	?	-	1,3	
gp130 family						
IL-6 (Pleiotrohic) (IRF1>Lys6>IFP)	+	+	+	?	1,3	GAS
Il-11(Pleiotrohic)	?	+	?	?	1,3	
OnM(Pleiotrohic)	?	+	+	?	1,3	
LIF(Pleiotrohic)	?	+	+	?	1,3	
CNTF(Pleiotrohic)	-/+	+	+	?	1,3	
G-CSF(Pleiotrohic)	?	+	?	?	1,3	
IL-12(Pleiotrohic)	+	-	+	+	1,3	
g-C family						
IL-2 (lymphocytes)	-	+	-	+	1,3,5	GAS
IL-4 (lymph/myeloid)	-	+	-	+	6	GAS (IRF1 = IFP >>Ly6)(IgH)
IL-7 (lymphocytes)	-	+	-	+	5	GAS
IL-9 (lymphocytes)	-	+	-	+	5	GAS
IL-13 (lymphocyte)	-	+	?	?	6	GAS
IL-15	?	+	?	+	5	GAS
gp140 family						
IL-3 (myeloid) (IRF1>IFP>>Ly6)	-	-	+	-	5	GAS
IL-5 (myeloid)	-	-	+	-	5	GAS
GM-CSF (myeloid)	-	-	+	-	5	GAS

Growth hormone family						
GH	?	-	+	-	5	
PRL	?	+/-	+	-	1,3,5	
EPO	?	-	+	-	5	GAS(B-CAS>IRF1=IFP>>Ly6)
Receptor Tyrosine Kinases						
EGF	?	+	+	-	1,3	GAS (IRF1)
PDGF	?	+	+	-	1,3	
CSF-1	?	+	+	-	1,3	GAS (not IRF1)

To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 33-34, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to bind STATs upon induction with a range of cytokines (Rothman et al., Immunity 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:

5':GCGCCTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAATGATTTCCCCGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO:1687)

The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:1688)

PCR amplification is performed using the SV40 promoter template present in the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:

5':CTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAATGATTTCCCCGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTATTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAGCTT:3' (SEQ ID NO:1689)

With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be instead of SEAP, in this or in any of the other Examples. Well known reporter molecules that can be used instead of SEAP include chloramphenicol

acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the GAS-SEAP vector. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

Thus, in order to generate mammalian stable cell lines expressing the GAS-SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding as described in Examples 33-34.

Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing NFK-B and EGR promoter sequences are described in Examples 35 and 36. However, many other promoters can be substituted using the protocols described in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, Il-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

Example 33: High-Throughput Screening Assay for T-cell Activity.

The following protocol is used to assess T-cell activity by identifying factors, and determining whether supernate containing a polypeptide of the invention proliferates and/or differentiates T-cells. T-cell activity is assessed using the

GAS/SEAP/Neo construct produced in Example 32. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The T-cell used in this assay is Jurkat T-cells (ATCC Accession No. TIB-152), although Molt-3 cells (ATCC Accession No. CRL-1552) and Molt-4 cells (ATCC Accession No. CRL-1582) cells can also be used.

Jurkat T-cells are lymphoblastic CD4+ Th1 helper cells. In order to generate stable cell lines, approximately 2 million Jurkat cells are transfected with the GAS-SEAP/neo vector using DMRIE-C (Life Technologies)(transfection procedure described below). The transfected cells are seeded to a density of approximately 20,000 cells per well and transfectants resistant to 1 mg/ml genticin selected. Resistant colonies are expanded and then tested for their response to increasing concentrations of interferon gamma. The dose response of a selected clone is demonstrated.

Specifically, the following protocol will yield sufficient cells for 75 wells containing 200 ul of cells. Thus, it is either scaled up, or performed in multiple to generate sufficient cells for multiple 96 well plates. Jurkat cells are maintained in RPMI + 10% serum with 1%Pen-Strep. Combine 2.5 mls of OPTI-MEM (Life Technologies) with 10 ug of plasmid DNA in a T25 flask. Add 2.5 ml OPTI-MEM containing 50 ul of DMRIE-C and incubate at room temperature for 15-45 mins.

During the incubation period, count cell concentration, spin down the required number of cells (10^7 per transfection), and resuspend in OPTI-MEM to a final concentration of 10^7 cells/ml. Then add 1ml of 1 x 10^7 cells in OPTI-MEM to T25 flask and incubate at 37 degree C for 6 hrs. After the incubation, add 10 ml of RPMI + 15% serum.

The Jurkat:GAS-SEAP stable reporter lines are maintained in RPMI + 10% serum, 1 mg/ml Genticin, and 1% Pen-Strep. These cells are treated with supernatants containing polypeptide of the present invention or polypeptide of the present invention induced polypeptides as produced by the protocol described in Example 31.

On the day of treatment with the supernatant, the cells should be washed and

resuspended in fresh RPMI + 10% serum to a density of 500,000 cells per ml. The exact number of cells required will depend on the number of supernatants being screened. For one 96 well plate, approximately 10 million cells (for 10 plates, 100 million cells) are required.

Transfer the cells to a triangular reservoir boat, in order to dispense the cells into a 96 well dish, using a 12 channel pipette. Using a 12 channel pipette, transfer 200 ul of cells into each well (therefore adding 100, 000 cells per well).

After all the plates have been seeded, 50 ul of the supernatants are transferred directly from the 96 well plate containing the supernatants into each well using a 12 channel pipette. In addition, a dose of exogenous interferon gamma (0.1, 1.0, 10 ng) is added to wells H9, H10, and H11 to serve as additional positive controls for the assay.

The 96 well dishes containing Jurkat cells treated with supernatants are placed in an incubator for 48 hrs (note: this time is variable between 48-72 hrs). 35 ul samples from each well are then transferred to an opaque 96 well plate using a 12 channel pipette. The opaque plates should be covered (using sellophene covers) and stored at -20 degree C until SEAP assays are performed according to Example 37. The plates containing the remaining treated cells are placed at 4 degree C and serve as a source of material for repeating the assay on a specific well if desired.

As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate Jurkat T cells. Over 30 fold induction is typically observed in the positive control wells.

The above protocol may be used in the generation of both transient, as well as, stable transfected cells, which would be apparent to those of skill in the art.

Example 34: High-Throughput Screening Assay Identifying Myeloid Activity

The following protocol is used to assess myeloid activity of polypeptide of the present invention by determining whether polypeptide of the present invention proliferates and/or differentiates myeloid cells. Myeloid cell activity is assessed using

the GAS/SEAP/Neo construct produced in Example 32. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The myeloid cell used in this assay is U937, a pre-monocyte cell line, although TF-1, HL60, or KG1 can be used.

To transiently transfect U937 cells with the GAS/SEAP/Neo construct produced in Example 32, a DEAE-Dextran method (Kharbanda et. al., 1994, Cell Growth & Differentiation, 5:259-265) is used. First, harvest $2x10e^7$ U937 cells and wash with PBS. The U937 cells are usually grown in RPMI 1640 medium containing 10% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 mg/ml streptomycin.

Next, suspend the cells in 1 ml of 20 mM Tris-HCl (pH 7.4) buffer containing 0.5 mg/ml DEAE-Dextran, 8 ug GAS-SEAP2 plasmid DNA, 140 mM NaCl, 5 mM KCl, 375 uM $Na_2HPO_4.7H_2O$, 1 mM $MgCl_2$, and 675 uM $CaCl_2$. Incubate at 37 degrees C for 45 min.

Wash the cells with RPMI 1640 medium containing 10% FBS and then resuspend in 10 ml complete medium and incubate at 37 degree C for 36 hr.

The GAS-SEAP/U937 stable cells are obtained by growing the cells in 400 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 400 ug/ml G418 for couple of passages.

These cells are tested by harvesting $1x10^8$ cells (this is enough for ten 96-well plates assay) and wash with PBS. Suspend the cells in 200 ml above described growth medium, with a final density of $5x10^5$ cells/ml. Plate 200 ul cells per well in the 96-well plate (or $1x10^5$ cells/well).

Add 50 ul of the supernatant prepared by the protocol described in Example 31. Incubate at 37 degee C for 48 to 72 hr. As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate U937 cells. Over 30 fold induction is typically observed in the positive control wells. SEAP assay the supernatant according to the protocol described in Example 37.

Example 35: High-Throughput Screening Assay Identifying Neuronal Activity.

When cells undergo differentiation and proliferation, a group of genes are activated through many different signal transduction pathways. One of these genes, EGR1 (early growth response gene 1), is induced in various tissues and cell types upon activation. The promoter of EGR1 is responsible for such induction. Using the EGR1 promoter linked to reporter molecules, activation of cells can be assessed by polypeptide of the present invention.

Particularly, the following protocol is used to assess neuronal activity in PC12 cell lines. PC12 cells (rat phenochromocytoma cells) are known to proliferate and/or differentiate by activation with a number of mitogens, such as TPA (tetradecanoyl phorbol acetate), NGF (nerve growth factor), and EGF (epidermal growth factor). The EGR1 gene expression is activated during this treatment. Thus, by stably transfecting PC12 cells with a construct containing an EGR promoter linked to SEAP reporter, activation of PC12 cells by polypeptide of the present invention can be assessed.

The EGR/SEAP reporter construct can be assembled by the following protocol. The EGR-1 promoter sequence (-633 to +1)(Sakamoto K et al., Oncogene 6:867-871 (1991)) can be PCR amplified from human genomic DNA using the following primers:

5’ GCGCTCGAGGGATGACAGCGATAGAACCCCGG -3' (SEQ ID NO: 1690)

5’ GCGAAGCTTCGCGACTCCCCGGATCCGCCTC-3' (SEQ ID NO: 1691)

Using the GAS:SEAP/Neo vector produced in Example 32, EGR1 amplified product can then be inserted into this vector. Linearize the GAS:SEAP/Neo vector using restriction enzymes XhoI/HindIII, removing the GAS/SV40 stuffer. Restrict the EGR1 amplified product with these same enzymes. Ligate the vector and the EGR1 promoter.

To prepare 96 well-plates for cell culture, two mls of a coating solution (1:30 dilution of collagen type I (Upstate Biotech Inc. Cat#08-115) in 30% ethanol (filter

sterilized)) is added per one 10 cm plate or 50 ml per well of the 96-well plate, and allowed to air dry for 2 hr.

PC12 cells are routinely grown in RPMI-1640 medium (Bio Whittaker) containing 10% horse serum (JRH BIOSCIENCES, Cat. # 12449-78P), 5% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 ug/ml streptomycin on a precoated 10 cm tissue culture dish. One to four split is done every three to four days. Cells are removed from the plates by scraping and resuspended with pipetting up and down for more than 15 times.

Transfect the EGR/SEAP/Neo construct into PC12 using the Lipofectamine protocol described in Example 31. EGR-SEAP/PC12 stable cells are obtained by growing the cells in 300 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 300 ug/ml G418 for couple of passages.

To assay for neuronal activity, a 10 cm plate with cells around 70 to 80% confluent is screened by removing the old medium. Wash the cells once with PBS (Phosphate buffered saline). Then starve the cells in low serum medium (RPMI-1640 containing 1% horse serum and 0.5% FBS with antibiotics) overnight.

The next morning, remove the medium and wash the cells with PBS. Scrape off the cells from the plate, suspend the cells well in 2 ml low serum medium. Count the cell number and add more low serum medium to reach final cell density as $5x10^5$ cells/ml.

Add 200 ul of the cell suspension to each well of 96-well plate (equivalent to $1x10^5$ cells/well). Add 50 ul supernatant produced by Example 31, 37 degree C for 48 to 72 hr. As a positive control, a growth factor known to activate PC12 cells through EGR can be used, such as 50 ng/ul of Neuronal Growth Factor (NGF). Over fifty-fold induction of SEAP is typically seen in the positive control wells. SEAP assay the supernatant according to Example 37.

Example 36: High-Throughput Screening Assay for T-cell Activity

NF-KB (Nuclear Factor KB) is a transcription factor activated by a wide variety of agents including the inflammatory cytokines IL-1 and TNF, CD30 and CD40, lymphotoxin-alpha and lymphotoxin-beta, by exposure to LPS or thrombin, and by expression of certain viral gene products. As a transcription factor, NF-KB regulates the expression of genes involved in immune cell activation, control of apoptosis (NF- KB appears to shield cells from apoptosis), B and T-cell development, anti-viral and antimicrobial responses, and multiple stress responses.

In non-stimulated conditions, NF- KB is retained in the cytoplasm with I-KB (Inhibitor KB). However, upon stimulation, I- KB is phosphorylated and degraded, causing NF- KB to shuttle to the nucleus, thereby activating transcription of target genes. Target genes activated by NF- KB include IL-2, IL-6, GM-CSF, ICAM-1 and class 1 MHC.

Due to its central role and ability to respond to a range of stimuli, reporter constructs utilizing the NF-KB promoter element are used to screen the supernatants produced in Example 31. Activators or inhibitors of NF-KB would be useful in treating, preventing, and/or diagnosing diseases. For example, inhibitors of NF-KB could be used to treat those diseases related to the acute or chronic activation of NF-KB, such as rheumatoid arthritis.

To construct a vector containing the NF-KB promoter element, a PCR based strategy is employed. The upstream primer contains four tandem copies of the NF-KB binding site (GGGGACTTTCCC) (SEQ ID NO:1692), 18 bp of sequence complementary to the 5' end of the SV40 early promoter sequence, and is flanked with an XhoI site:

5':GCGGCCTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGAC
TTTCCATCCTGCCATCTCAATTAG:3' (SEQ ID NO:1693)

The downstream primer is complementary to the 3' end of the SV40 promoter and is flanked with a Hind III site:

5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:1688)

PCR amplification is performed using the SV40 promoter template present in the pB-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is

digested with XhoI and Hind III and subcloned into BLSK2-. (Stratagene) Sequencing with the T7 and T3 primers confirms the insert contains the following sequence:

5':CTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGACTTTCC
ATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCC
ATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCATGGCTGA
CTAATTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTA
TTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAA
GCTT:3' (SEQ ID NO:1694)

Next, replace the SV40 minimal promoter element present in the pSEAP2-promoter plasmid (Clontech) with this NF-KB/SV40 fragment using XhoI and HindIII. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

In order to generate stable mammalian cell lines, the NF-KB/SV40/SEAP cassette is removed from the above NF-KB/SEAP vector using restriction enzymes SalI and NotI, and inserted into a vector containing neomycin resistance. Particularly, the NF-KB/SV40/SEAP cassette was inserted into pGFP-1 (Clontech), replacing the GFP gene, after restricting pGFP-1 with SalI and NotI.

Once NF-KB/SV40/SEAP/Neo vector is created, stable Jurkat T-cells are created and maintained according to the protocol described in Example 33. Similarly, the method for assaying supernatants with these stable Jurkat T-cells is also described in Example 33. As a positive control, exogenous TNF alpha (0.1,1, 10 ng) is added to wells H9, H10, and H11, with a 5-10 fold activation typically observed.

Example 37: Assay for SEAP Activity

As a reporter molecule for the assays described in Examples 33-36, SEAP activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the following general procedure. The Tropix Phospho-light Kit supplies the Dilution, Assay, and Reaction Buffers used below.

Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 ul of 2.5x dilution buffer into Optiplates containing 35 ul of a supernatant. Seal the plates with a plastic sealer and incubate at 65 degree C for 30 min. Separate the Optiplates to avoid uneven heating.

Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 ml Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the table below).. Add 50 ul Reaction Buffer and incubate at room temperature for 20 minutes. Since the intensity of the chemiluminescent signal is time dependent, and it takes about 10 minutes to read 5 plates on luminometer, one should treat 5 plates at each time and start the second set 10 minutes later.

Read the relative light unit in the luminometer. Set H12 as blank, and print the results. An increase in chemiluminescence indicates reporter activity.

Reaction Buffer Formulation:

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4
15	85	4.25
16	90	4.5
17	95	4.75
18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6

23	125	6.25
24	130	6.5
25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5
37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11
43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

Example 38: High-Throughput Screening Assay Identifying Changes in Small

Molecule Concentration and Membrane Permeability

Binding of a ligand to a receptor is known to alter intracellular levels of small molecules. such as calcium, potassium, sodium, and pH, as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.

The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-4 (Molecular Probes, Inc.; catalog no. F-14202), used here.

For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO_2 incubator for 20 hours. The adherent cells are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.

A stock solution of 1 mg/ml fluo-4 is made in 10% pluronic acid DMSO. To load the cells with fluo-4 , 50 ul of 12 ug/ml fluo-4 is added to each well. The plate is incubated at 37 degrees C in a CO_2 incubator for 60 min. The plate is washed four times in the Biotek washer with HBSS leaving 100 ul of buffer.

For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to 2-5x10^6 cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-4 solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37 degrees C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to 1x10^6 cells/ml, and dispensed into a microplate. 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley Cell Wash with 200 ul, followed by an aspiration step to 100 ul final volume.

For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-4 . The supernatant is added to the well, and a change in fluorescence is detected.

To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm; and (6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular signaling event caused by the a molecule, either polypeptide of the present invention or a molecule induced by polypeptide of the present invention, which has resulted in an increase in the intracellular Ca^{++} concentration.

Example 40: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity

The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In addition there are a large family of RPTKs for which the corresponding ligand is unknown. Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

Because of the wide range of known factors capable of stimulating tyrosine kinase activity, identifying whether polypeptide of the present invention or a molecule induced by polypeptide of the present invention is capable of activating tyrosine

kinase signal transduction pathways is of interest. Therefore, the following protocol is designed to identify such molecules capable of activating the tyrosine kinase signal transduction pathways.

Seed target cells (e.g., primary keratinocytes) at a density of approximately 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with 100% ethanol, rinsed with water and dried overnight. Some plates are coated for 2 hr with 100 ml of cell culture grade type I collagen (50 mg/ml), gelatin (2%) or polylysine (50 mg/ml), all of which can be purchased from Sigma Chemicals (St. Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford,MA), or calf serum, rinsed with PBS and stored at 4 degree C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences, Inc. (Sacramento, CA) after 48 hr. Falcon plate covers #3071 from Becton Dickinson (Bedford,MA) are used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium. Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 31, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na3VO4, 2 mM Na4P2O7 and a cocktail of protease inhibitors (# 1836170) obtained from Boeheringer Mannheim (Indianapolis, IN) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4^{o}C. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on ice. To obtain extracts clarified by centrifugation, the content of each well, after

detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4 degree C at 16,000 x g.

Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

Generally, the tyrosine kinase activity of a supernatant is evaluated by determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from Boehringer Mannheim.

The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg_{2+} (5mM ATP/50mM $MgCl_2$), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM $MgCl_2$, 5 mM $MnCl_2$, 0.5 mg/ml BSA), then 5ul of Sodium Vanadate(1mM), and then 5ul of water. Mix the components gently and preincubate the reaction mix at 30 degree C for 2 min. Initial the reaction by adding 10ul of the control enzyme or the filtered supernatant.

The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mm EDTA and place the reactions on ice.

Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction mixture to a microtiter plate (MTP) module and incubating at 37 degree C for 20 min. This allows the streptavadin coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phospotyrosine antibody conjugated to horse radish peroxidase(anti-P-Tyr-POD(0.5u/ml)) to each well and incubate at 37 degree C for one hour. Wash the well as above.

Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound

peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

Example 41: High-Throughput Screening Assay Identifying Phosphorylation Activity

As a potential alternative and/or compliment to the assay of protein tyrosine kinase activity described in Example 40, an assay which detects activation (phosphorylation) of major intracellular signal transduction intermediates can also be used. For example, as described below one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other molecules, such as Raf, JNK, p38 MAP, Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting these molecules for Erk-1 or Erk-2 in the following assay.

Specifically, assay plates are made by coating the wells of a 96-well ELISA plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz Biotechnology). (To detect other molecules, this step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4 degree C until use.

A431 cells are seeded at 20,000/well in a 96-well Loprodyne filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and then treated with EGF (6ng/well) or 50 ul of the supernatants obtained in Example 31 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit)

antibody (1ug/ml) which specifically recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation by polypeptide of the present invention or a molecule induced by polypeptide of the present invention.

Example 42: Assay for the Stimulation of Bone Marrow CD34+ Cell Proliferation

This assay is based on the ability of human CD34+ to proliferate in the presence of hematopoietic growth factors and evaluates the ability of isolated polypeptides expressed in mammalian cells to stimulate proliferation of CD34+ cells.

It has been previously shown that most mature precursors will respond to only a single signal. More immature precursors require at least two signals to respond. Therefore, to test the effect of polypeptides on hematopoietic activity of a wide range of progenitor cells, the assay contains a given polypeptide in the presence or absence of other hematopoietic growth factors. Isolated cells are cultured for 5 days in the presence of Stem Cell Factor (SCF) in combination with tested sample. SCF alone has a very limited effect on the proliferation of bone marrow (BM) cells, acting in such conditions only as a "survival" factor. However, combined with any factor exhibiting stimulatory effect on these cells (e.g., IL-3), SCF will cause a synergistic effect. Therefore, if the tested polypeptide has a stimulatory effect on a hematopoietic progenitors, such activity can be easily detected. Since normal BM cells have a low level of cycling cells, it is likely that any inhibitory effect of a given polypeptide, or agonists or antagonists thereof, might not be detected. Accordingly, assays for an inhibitory effect on progenitors is preferably tested in cells that are first subjected to *in vitro* stimulation with SCF+IL+3, and then contacted with the compound that is being evaluated for inhibition of such induced proliferation.

Briefly, CD34+ cells are isolated using methods known in the art. The cells

are thawed and resuspended in medium (QBSF 60 serum-free medium with 1% L-glutamine (500ml) Quality Biological, Inc., Gaithersburg, MD Cat# 160-204-101). After several gentle centrifugation steps at 200 x g, cells are allowed to rest for one hour. The cell count is adjusted to 2.5 x 10^5 cells/ml. During this time, 100 μl of sterile water is added to the peripheral wells of a 96-well plate. The cytokines that can be tested with a given polypeptide in this assay is rhSCF (R&D Systems, Minneapolis, MN, Cat# 255-SC) at 50 ng/ml alone and in combination with rhSCF and rhIL-3 (R&D Systems, Minneapolis, MN, Cat# 203-ML) at 30 ng/ml. After one hour, 10 μl of prepared cytokines, 50 μl of the supernatants prepared in Example 31 (supernatants at 1:2 dilution = 50 μl) and 20 μl of diluted cells are added to the media which is already present in the wells to allow for a final total volume of 100 μl. The plates are then placed in a 37°C/5% CO_2 incubator for five days.

Eighteen hours before the assay is harvested, 0.5 μCi/well of [3H] Thymidine is added in a 10 μl volume to each well to determine the proliferation rate. The experiment is terminated by harvesting the cells from each 96-well plate to a filtermat using the Tomtec Harvester 96. After harvesting, the filtermats are dried, trimmed and placed into OmniFilter assemblies consisting of one OmniFilter plate and one OmniFilter Tray. 60 μl Microscint is added to each well and the plate sealed with TopSeal-A press-on sealing film A bar code 15 sticker is affixed to the first plate for counting. The sealed plates is then loaded and the level of radioactivity determined via the Packard Top Count and the printed data collected for analysis. The level of radioactivity reflects the amount of cell proliferation.

The studies described in this example test the activity of a given polypeptide to stimulate bone marrow CD34+ cell proliferation. One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof. As a nonlimiting example, potential antagonists tested in this assay would be expected to inhibit cell proliferation in the presence of cytokines and/or to increase the inhibition of cell proliferation in the presence of cytokines and a given polypeptide. In contrast, potential agonists tested in this assay would be expected to enhance cell

proliferation and/or to decrease the inhibition of cell proliferation in the presence of cytokines and a given polypeptide.

The ability of a gene to stimulate the proliferation of bone marrow CD34+ cells indicates that polynucleotides and polypeptides corresponding to the gene are useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein.

Example 43: Assay for Extracellular Matrix Enhanced Cell Response (EMECR)

The objective of the Extracellular Matrix Enhanced Cell Response (EMECR) assay is to identify gene products (e.g., isolated polypeptides) that act on the hematopoietic stem cells in the context of the extracellular matrix (ECM) induced signal.

Cells respond to the regulatory factors in the context of signal(s) received from the surrounding microenvironment. For example, fibroblasts, and endothelial and epithelial stem cells fail to replicate in the absence of signals from the ECM. Hematopoietic stem cells can undergo self-renewal in the bone marrow, but not in *in vitro* suspension culture. The ability of stem cells to undergo self-renewal *in vitro* is dependent upon their interaction with the stromal cells and the ECM protein fibronectin (fn). Adhesion of cells to fn is mediated by the $\alpha_5.\beta_1$ and $\alpha_4.\beta_1$ integrin receptors, which are expressed by human and mouse hematopoietic stem cells. The factor(s) which integrate with the ECM environment and responsible for stimulating stem cell self-renewal has not yet been identified. Discovery of such factors should be of great interest in gene therapy and bone marrow transplant applications

Briefly, polystyrene, non tissue culture treated, 96-well plates are coated with fn fragment at a coating concentration of 0.2 $\mu g/cm^2$. Mouse bone marrow cells are plated (1,000 cells/well) in 0.2 ml of serum-free medium. Cells cultured in the presence of IL-3 (5 ng/ml) + SCF (50 ng/ml) would serve as the positive control,

conditions under which little self-renewal but pronounced differentiation of the stem cells is to be expected. Gene products of the invention (e.g., including, but not limited to, polynucleotides and polypeptides of the present invention, and supernatants produced in Example 31), are tested with appropriate negative controls in the presence and absence of SCF(5.0 ng/ml), where test factor supernates represent 10% of the total assay volume. The plated cells are then allowed to grow by incubating in a low oxygen environment (5% CO_2, 7% O_2, and 88% N_2) tissue culture incubator for 7 days. The number of proliferating cells within the wells is then quantitated by measuring thymidine incorporation into cellular DNA. Verification of the positive hits in the assay will require phenotypic characterization of the cells, which can be accomplished by scaling up of the culture system and using appropriate antibody reagents against cell surface antigens and FACScan.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

If a particular polypeptide of the present invention is found to be a stimulator of hematopoietic progenitors, polynucleotides and polypeptides corresponding to the gene encoding said polypeptide may be useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein. The gene product may also be useful in the expansion of stem cells and committed progenitors of various blood lineages, and in the differentiation and/or proliferation of various cell types.

Additionally, the polynucleotides and/or polypeptides of the gene of interest and/or agonists and/or antagonists thereof, may also be employed to inhibit the proliferation and differentiation of hematopoietic cells and therefore may be employed to protect bone marrow stem cells from chemotherapeutic agents during chemotherapy. This antiproliferative effect may allow administration of higher doses of chemotherapeutic agents and, therefore, more effective chemotherapeutic treatment.

Moreover, polynucleotides and polypeptides corresponding to the gene of interest may also be useful for the treatment and diagnosis of hematopoietic related disorders such as, for example, anemia, pancytopenia, leukopenia, thrombocytopenia or leukemia since stromal cells are important in the production of cells of hematopoietic lineages. The uses include bone marrow cell ex-vivo culture, bone marrow transplantation, bone marrow reconstitution, radiotherapy or chemotherapy of neoplasia.

Example 44: Human Dermal Fibroblast and Aortic Smooth Muscle Cell Proliferation

The polypeptide of interest is added to cultures of normal human dermal fibroblasts (NHDF) and human aortic smooth muscle cells (AoSMC) and two co-assays are performed with each sample. The first assay examines the effect of the polypeptide of interest on the proliferation of normal human dermal fibroblasts (NHDF) or aortic smooth muscle cells (AoSMC). Aberrant growth of fibroblasts or smooth muscle cells is a part of several pathological processes, including fibrosis, and restenosis. The second assay examines IL6 production by both NHDF and SMC. IL6 production is an indication of functional activation. Activated cells will have increased production of a number of cytokines and other factors, which can result in a proinflammatory or immunomodulatory outcome. Assays are run with and without co-TNFa stimulation, in order to check for costimulatory or inhibitory activity.

Briefly, on day 1, 96-well black plates are set up with 1000 cells/well (NHDF) or 2000 cells/well (AoSMC) in 100 μl culture media. NHDF culture media contains: Clonetics FB basal media, 1mg/ml hFGF, 5mg/ml insulin, 50mg/ml gentamycin, 2%FBS, while AoSMC culture media contains Clonetics SM basal media, 0.5 μg/ml hEGF, 5mg/ml insulin, 1μg/ml hFGF, 50mg/ml gentamycin, 50 μg/ml Amphotericin B, 5%FBS. After incubation at 37°C for at least 4-5 hours, culture media is aspirated and replaced with growth arrest media. Growth arrest media for NHDF contains fibroblast basal media, 50mg/ml gentamycin, 2% FBS, while growth arrest media for AoSMC contains SM basal media, 50mg/ml gentamycin, 50μg/ml Amphotericin B,

0.4% FBS. Incubate at 37°C until day 2.

On day 2, serial dilutions and templates of the polypeptide of interest are designed such that they always include media controls and known-protein controls. For both stimulation and inhibition experiments, proteins are diluted in growth arrest media. For inhibition experiments, TNFa is added to a final concentration of 2ng/ml (NHDF) or 5ng/ml (AoSMC). Add 1/3 vol media containing controls or polypeptides of the present invention and incubate at 37°C/5% CO_2 until day 5.

Transfer 60μl from each well to another labeled 96-well plate, cover with a plate-sealer, and store at 4°C until Day 6 (for IL6 ELISA). To the remaining 100 μl in the cell culture plate, aseptically add Alamar Blue in an amount equal to 10% of the culture volume (10μl). Return plates to incubator for 3 to 4 hours. Then measure fluorescence with excitation at 530nm and emission at 590nm using the CytoFluor. This yields the growth stimulation/inhibition data.

On day 5, the IL6 ELISA is performed by coating a 96 well plate with 50-100 ul/well of Anti-Human IL6 Monoclonal antibody diluted in PBS, pH 7.4, incubate ON at room temperature.

On day 6, empty the plates into the sink and blot on paper towels. Prepare Assay Buffer containing PBS with 4% BSA. Block the plates with 200 μl/well of Pierce Super Block blocking buffer in PBS for 1-2 hr and then wash plates with wash buffer (PBS, 0.05% Tween-20). Blot plates on paper towels. Then add 50 μl/well of diluted Anti-Human IL-6 Monoclonal, Biotin-labeled antibody at 0.50 mg/ml. Make dilutions of IL-6 stock in media (30, 10, 3, 1, 0.3, 0 ng/ml). Add duplicate samples to top row of plate. Cover the plates and incubate for 2 hours at RT on shaker. Plates are washed with wash buffer and blotted on paper towels. Dilute EU-labeled Streptavidin 1:1000 in Assay buffer, and add 100 μl/well. Cover the plate and incubate 1 h at RT. Plates are again washed with wash buffer and blotted on paper towels. Add 100 μl/well of Enhancement Solution and shake for 5 minutes. Read the plate on the Wallac DELFIA Fluorometer. Readings from triplicate samples in each assay are tabulated and averaged.

A positive result in this assay suggests AoSMC cell proliferation and that the

polypeptide of the present invention may be involved in dermal fibroblast proliferation and/or smooth muscle cell proliferation. A positive result also suggests many potential uses of polypeptides, polynucleotides, agonists and/or antagonists of the polynucleotide/polypeptide of the present invention which gives a positive result. For example, inflammation and immune responses, wound healing, and angiogenesis, as detailed throughout this specification. Particularly, polypeptides of the present invention and polynucleotides of the present invention may be used in wound healing and dermal regeneration, as well as the promotion of vasculargenesis, both of the blood vessels and lymphatics. The growth of vessels can be used in the treatment of, for example, cardiovascular diseases. Additionally, antagonists of polypeptides and polynucleotides of the invention may be useful in treating diseases, disorders, and/or conditions which involve angiogenesis by acting as an anti-vascular (e.g., anti-angiogenesis). These diseases, disorders, and/or conditions are known in the art and/or are described herein, such as, for example, malignancies, solid tumors, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; artheroscleric plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uvietis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophiliac joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis. Moreover, antagonists of polypeptides and polynucleotides of the invention may be useful in treating anti-hyperproliferative diseases and/or anti-inflammatory known in the art and/or described herein.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or

antagonists and fragments and variants thereof.

Example 45: Cellular Adhesion Molecule (CAM) Expression on Endothelial Cells

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Briefly, endothelial cells (e.g., Human Umbilical Vein Endothelial cells (HUVECs)) are grown in a standard 96 well plate to confluence, growth medium is removed from the cells and replaced with 100 μl of 199 Medium (10% fetal bovine serum (FBS)). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 μl volumes). Plates are then incubated at 37°C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 μl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min. Fixative is removed from the wells and wells are washed 1X with PBS(+Ca,Mg) + 0.5% BSA and drained. 10 μl of diluted primary antibody is added to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 μg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed three times with PBS(+Ca,Mg) + 0.5% BSA. 20 μl of diluted ExtrAvidin-Alkaline

Phosphotase (1:5,000 dilution, refered to herein as the working dilution) are added to each well and incubated at 37°C for 30 min. Wells are washed three times with PBS(+Ca,Mg)+0.5% BSA. Dissolve 1 tablet of p-Nitrophenol Phosphate pNPP per 5 ml of glycine buffer (pH 10.4). 100 μl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 μl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 μl of pNNP reagent is then added to each of the standard wells. The plate is incubated at 37°C for 4h. A volume of 50 μl of 3M NaOH is added to all wells. The plate is read on a plate reader at 405 nm using the background subtraction option on blank wells filled with glycine buffer only. Additionally, the template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

Example 46: Alamar Blue Endothelial Cells Proliferation Assay

This assay may be used to quantitatively determine protein mediated inhibition of bFGF-induced proliferation of Bovine Lymphatic Endothelial Cells (LECs), Bovine Aortic Endothelial Cells (BAECs) or Human Microvascular Uterine Myometrial Cells (UTMECs). This assay incorporates a fluorometric growth indicator based on detection of metabolic activity. A standard Alamar Blue Proliferation Assay is prepared in EGM-2MV with 10 ng /ml of bFGF added as a source of endothelial cell stimulation. This assay may be used with a variety of endothelial cells with slight changes in growth medium and cell concentration. Dilutions of the protein batches to be tested are diluted as appropriate. Serum-free medium (GIBCO SFM) without bFGF is used as a non-stimulated control and Angiostatin or TSP-1 are included as a known inhibitory controls.

Briefly, LEC, BAECs or UTMECs are seeded in growth media at a density of 5000 to 2000 cells/well in a 96 well plate and placed at 37-C overnight. After the

overnight incubation of the cells, the growth media is removed and replaced with GIBCO EC-SFM. The cells are treated with the appropriate dilutions of the protein of interest or control protein sample(s) (prepared in SFM) in triplicate wells with additional bFGF to a concentration of 10 ng/ ml. Once the cells have been treated with the samples, the plate(s) is/are placed back in the 37° C incubator for three days. After three days 10 ml of stock alamar blue (Biosource Cat# DAL1100) is added to each well and the plate(s) is/are placed back in the 37°C incubator for four hours. The plate(s) are then read at 530nm excitation and 590nm emission using the CytoFluor fluorescence reader. Direct output is recorded in relative fluorescence units.

Alamar blue is an oxidation-reduction indicator that both fluoresces and changes color in response to chemical reduction of growth medium resulting from cell growth. As cells grow in culture, innate metabolic activity results in a chemical reduction of the immediate surrounding environment. Reduction related to growth causes the indicator to change from oxidized (non-fluorescent blue) form to reduced (fluorescent red) form. i.e. stimulated proliferation will produce a stronger signal and inhibited proliferation will produce a weaker signal and the total signal is proportional to the total number of cells as well as their metabolic activity. The background level of activity is observed with the starvation medium alone. This is compared to the output observed from the positive control samples (bFGF in growth medium) and protein dilutions.

Example 47: Detection of Inhibition of a Mixed Lymphocyte Reaction

This assay can be used to detect and evaluate inhibition of a Mixed Lymphocyte Reaction (MLR) by gene products (e.g., isolated polypeptides). Inhibition of a MLR may be due to a direct effect on cell proliferation and viability, modulation of costimulatory molecules on interacting cells, modulation of adhesiveness between lymphocytes and accessory cells, or modulation of cytokine production by accessory cells. Multiple cells may be targeted by these polypeptides

since the peripheral blood mononuclear fraction used in this assay includes T, B and natural killer lymphocytes, as well as monocytes and dendritic cells.

Polypeptides of interest found to inhibit the MLR may find application in diseases associated with lymphocyte and monocyte activation or proliferation. These include, but are not limited to, diseases such as asthma, arthritis, diabetes, inflammatory skin conditions, psoriasis, eczema, systemic lupus erythematosus, multiple sclerosis, glomerulonephritis, inflammatory bowel disease, crohn's disease, ulcerative colitis, arteriosclerosis, cirrhosis, graft vs. host disease, host vs. graft disease, hepatitis, leukemia and lymphoma.

Briefly, PBMCs from human donors are purified by density gradient centrifugation using Lymphocyte Separation Medium (LSM®, density 1.0770 g/ml, Organon Teknika Corporation, West Chester, PA). PBMCs from two donors are adjusted to 2 x 10^6 cells/ml in RPMI-1640 (Life Technologies, Grand Island, NY) supplemented with 10% FCS and 2 mM glutamine. PBMCs from a third donor is adjusted to 2 x 10^5 cells/ml. Fifty microliters of PBMCs from each donor is added to wells of a 96-well round bottom microtiter plate. Dilutions of test materials (50 μl) is added in triplicate to microtiter wells. Test samples (of the protein of interest) are added for final dilution of 1:4; rhuIL-2 (R&D Systems, Minneapolis, MN, catalog number 202-IL) is added to a final concentration of 1 μg/ml; anti-CD4 mAb (R&D Systems, clone 34930.11, catalog number MAB379) is added to a final concentration of 10 μg/ml. Cells are cultured for 7-8 days at 37°C in 5% CO_2, and 1 μC of [^{3}H] thymidine is added to wells for the last 16 hrs of culture. Cells are harvested and thymidine incorporation determined using a Packard TopCount. Data is expressed as the mean and standard deviation of triplicate determinations.

Samples of the protein of interest are screened in separate experiments and compared to the negative control treatment, anti-CD4 mAb, which inhibits proliferation of lymphocytes and the positive control treatment, IL-2 (either as recombinant material or supernatant), which enhances proliferation of lymphocytes.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or

antagonists and fragments and variants thereof.

It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above teachings and, therefore, are within the scope of the appended claims.

The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals, books, or other disclosures) in the Background of the Invention, Detailed Description, and Examples is hereby incorporated herein by reference. Further, the hard copy of the sequence listing submitted herewith and the corresponding computer readable form are both incorporated herein by reference in their entireties. Moreover, the hard copy of and the corresponding computer readable form of the Sequence Listing of Serial No. 60/124,270 are also incorporated herein by reference in their entireties.

Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

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United States of America

Date of deposit	Accession Number
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Applicant's or agent's file reference number	PA106PCT	International application N	UNASSIGNED

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UNITED KINGDOM

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The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. 209061

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121 , line N/A .

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 20 May 1997	Accession Number 209062

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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ATCC Deposit No. 209062

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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Page 2
ATCC Deposit No. 209062

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 20 May 1997	Accession Number 209063

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209063

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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Page 2
ATCC Deposit No. 209063

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 20 May 1997	Accession Number 209064

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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ATCC Deposit No. 209064

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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Page 2
ATCC Deposit No. 209064

DENMARK

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SWEDEN

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NETHERLANDS

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557

Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 20 May 1997	Accession Number 209065

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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ATCC Deposit No. 209065

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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Page 2
ATCC Deposit No. 209065

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209066

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

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Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209066

CANADA

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FINLAND

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UNITED KINGDOM

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Page 2
ATCC Deposit No. 209066

DENMARK

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA106PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description
on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 20 May 1997	Accession Number 209067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☑ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer [illegible] Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209067

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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Page 2
ATCC Deposit No. 209067

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 20 May 1997	Accession Number 209068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer PCT/International Appl Processing Div. (703) [illegible]	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209068

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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Page 2
ATCC Deposit No. 209068

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121 , line N/A .

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209069

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer Jeryl McDowell PCT/Internat'l Appl Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209069

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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Page 2
ATCC Deposit No. 209069

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121 , line N/A .

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 12 January 1998	Accession Number 209579

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer Joni McDowell PCT/Internat'l Appl Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209579

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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Page 2
ATCC Deposit No. 209579

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
12 January 1998	209578

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer Jerry McDowell PCT/Internat'l Appl Processing Div. (703) 305-3030	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209578

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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Page 2
ATCC Deposit No. 209578

DENMARK

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121 , line N/A .

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 16 July 1998	Accession Number 203067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

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Authorized officer Jeryl McDowell PCT/Internat'l Appl Processing Div. (703) 305-3663	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 203067

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. 203067

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121 , line N/A .

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
16 July 1998	203068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☑ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer Jerol McDowell PCT/Internat'l Appl Processing Div. (703) 305-3339	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 203068

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. 203068

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 1 February 1999	Accession Number 203609

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer Jeryl McDowell PCT/Internat'l Appl Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 203609

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. 203609

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
1 February 1999	203610

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
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Authorized officer Jeryl McDowell PCT/Internat'l Appl Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 203610

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. 203610

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
17 November 1998	203485

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer Jeryl McDowell PCT/Internat'l Appl Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. 203485

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. 203485

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 18 June 1999	Accession Number PTA-252

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer Jaryl McDowell PCT/Internat'l Appl Processing Div. (703) 305-3839	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. PTA-252

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. PTA-252

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA106PCT	International application '	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
18 June 1999	PTA-253

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☑ This sheet was received with the international application Jeryl McDowell	☐ This sheet was received by the International Bureau on:
Authorized officer PCT/Internat'l Appl Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. PTA-253

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2
ATCC Deposit No. PTA-253

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED

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(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description
on page 121, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit 22 December 1999	Accession Number PTA-1081

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☑ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer Jeni L McDowell PCT/Internat'l Appl Processing Div. (703) 305-3639	Authorized officer

Form PCT/RO/134 (July 1992)

ATCC Deposit No. PTA-1081

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

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Page 2
ATCC Deposit No. PTA-1081

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What Is Claimed Is:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X or a polynucleotide fragment of the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(c) a polynucleotide encoding a polypeptide fragment of a polypeptide encoded by SEQ ID NO:X or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(d) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y or a polypeptide domain encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(e) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:Y or a polypeptide epitope encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;

(f) a polynucleotide encoding a polypeptide of SEQ ID NO:Y or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X, having biological activity;

(g) a polynucleotide which is a variant of SEQ ID NO:X;

(h) a polynucleotide which is an allelic variant of SEQ ID NO:X;

(i) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;

(j) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(i), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide

sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a protein.

3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:Y or the polypeptide encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:X or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X.

5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.

11. An isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polypeptide fragment of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(b) a polypeptide fragment of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone, having biological activity;

(c) a polypeptide domain of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(d) a polypeptide epitope of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(e) a full length protein of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;

(f) a variant of SEQ ID NO:Y;

(g) an allelic variant of SEQ ID NO:Y; or

(h) a species homologue of the SEQ ID NO:Y.

12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.

13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.

14. A recombinant host cell that expresses the isolated polypeptide of claim 11.

15. A method of making an isolated polypeptide comprising:

(a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and

(b) recovering said polypeptide.

16. The polypeptide produced by claim 15.

17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 or the polynucleotide of claim 1.

18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.

19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:

(a) contacting the polypeptide of claim 11 with a binding partner; and

(b) determining whether the binding partner effects an activity of the polypeptide.

21. The gene corresponding to the cDNA sequence of SEQ ID NO:Y.

22. A method of identifying an activity in a biological assay, wherein the method comprises:

(a) expressing SEQ ID NO:X in a cell;
(b) isolating the supernatant;
(c) detecting an activity in a biological assay; and
(d) identifying the protein in the supernatant having the activity.

23. The product produced by the method of claim 20.

SEQUENCE LISTING

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<220>
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<220>
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<222> (1055)
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<222> (1373)
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<211> 3804
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (806)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (846)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1517)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2110)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2116)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2137)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2150)
<223> n equals a,t,g, or c

<400> 12
gcgcacggtt cactcccgct gtatattaag gcgccggcga kcgcggcctg aggctgctcc 60
cggacaaggg caacgagcgt ttcgtttgga cttctcgact tgagtgcccg cctccttcgc 120
cgccgcctct gcagtcctca gcgcagtctt tccacaggag ccagcatact tcctgaacat 180
ggagagtgtt gttcgccgct gcccattctt atcccgagtc ccccaggcct ttctgcagaa 240
agcaggcaaa tctctgttgt tctatgccca aaactgcccc aagatgatgg aagttggggc 300
caagccagcc cctcgggcat tgtccactgc agcagtacac taccaacaga tcaaagaaac 360
ccctccggcc agtgagaaag acaaaactgc taaggccaag gtccaacaga ctcctgatgg 420
atcccagcag agtccagatg gcacacagct tccgtctgga cacccttgc ctgccacaag 480
ccagggcact gcaagcaaat gccctttcct ggcagcacag atgaatcaga gaggcagcag 540
tgtcttctgc aaagccagtc ttgagcttca ggaggatgtg caggaaatga atgccgtgag 600
gaaagaggtt gctgaaacct cagcaggccc cagtgtggtt agtgtgaaaa ccgatggagg 660
ggatcccagt ggactgctga agaacttcca ggacatyatg caaaagcaaa gaccagaaag 720
agtgtctcat cttcttcaag ataacttgcc aaaatctgtt tccacttttc agtatgatcg 780
tttctttgag aaaaaaattg atgagnaaaa agaatgacca cacctatcga gtttttaaaa 840
ctgtgnaacc ggcgagcaca catcttcccc atggcagatg actattcaga ctccctcatc 900
accaaaaagc aagtgtcagt ctggtgcagt aatgactacc taggaatgag tcgccaccca 960
cgggtgtgtg gggcagttat ggacactttg aaacaacatg gtgctggggc aggtggtact 1020
agaaatattt ctggaactag taaattccat gtggacttag agcgggagct ggcagacctc 1080

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catgggaaag atgccgcact cttgttttcc tcgtgctttg tggccaatga ctcaaccctc 1140
ttcaccctgg ctaagatgat gccaggctgt gagatttact ctgattctgg gaaccatgcc 1200
tccatgatcc aagggattcg aaacagccga gtgccaaagt acatcttccg ccacaatgat 1260
gtcagccacc tcagagaact gctgcaaaga tctgacccct cagtccccaa gattgtggca 1320
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gcccatgagt ttggagcaat caccttcgtg gatgaggtcc acgcaggggg ctttatgggg 1440
ctcgaggcgg agggattggg gatcgggatg gagtcatgcc aaaaatggac atcatttctg 1500
gaacacttgg caaagcnttt ggttgtkttg gagggtacat cgccagcacg agttctctga 1560
ttgacaccgt acggtcctat gctgctggct tcatcttcac cacctctctg ccacccatgc 1620
tgctggctgg agccctggag tctgtgcgga tcctgaagag cgctgaggga cgggtgcttc 1680
gccgccagca ccagcgcaac gtcaaactca tgagacagat gctaatggat gccggcctcc 1740
ctgttgtcca ctgccccagc cacatcatcc ctgtgcgggt tgcagatgct gctaaaaaca 1800
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ctacggtgcc ccggggagaa gagctcctac ggattgcccc caccccctcac cacacacccc 1920
agatgatgaa ctacttcctt gagaatctgc tagtcacatg gaagcaagtg gggctgggaa 1980
ctgaagcctc attccttcag ctggagtggc aatttcttgc arggagggcc aytgcatttg 2040
aagtgatgag tgaaagagag aagtyctatt tttcttcagg gttttgaggc aagtttgggt 2100
attctggttn agggcntgag gcattggacc ttcattnttt ttcaatttan accccag    2157
```

```
<210> 13
<211> 1117
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1102)
<223> n equals a,t,g, or c

<400> 13
ggcagagcct ggactcccgt gagctggaag gaacagattt aatatctagg ggctgggtat 60
ccccacatca ctcatttggg gggtcaaggg acccgggcaa tatagtattc tgctcagtgt 120
ctggagatca tctacccagg ctggggcttc tgggacaggc gaggacccac ggaccctgga 180
agagctggtc caggggactg aactcccggc atctttacag agcagagcat gatcacattc 240
ctgccgctgc tgctggggct cagcctgggc tgcacaggag caggtggctt cgtggcccat 300
gtggaaagca cctgtctgtt ggatgatgct gggactccaa aggatttcac atactgcatc 360
tccttcaaca aggatctgct gacctgctgg gatccagagg agaataagat ggccccttgc 420
gaatttgggg tgctgaatag cttggcgaat gtcctctcac agcacctcaa ccaaaaagac 480
accctgatgc agcgcttgcg caatgggctt cagaattgtg ccacacacac ccagcccttc 540
tggggatcac tgaccaacag gacacggcca ccatctgtgc aagtagccaa aaccactcct 600
tttaacacga gggagcctgt gatgctggcc tgctatgtgt ggggcttcta tccagcagaa 660
gtgactatca cgtggaggaa gaacgggaag cttgtcatgc ctcacagcag tgcgcacaag 720
actgcccagc ccaatggaga ctggacatac cagaccctct cccatttagc cttaaccccc 780
tcttacgggg acacttacac ctgtktggta gagcacattg ggctcctga gcccatcctt 840
cgggactgga cacctgggct gtcccccatg cagaccctga aggtttctgt gtctgcagtg 900
actctgggcc tgggcctcat catcttctct cttggtgtga tcagctggcg gagagctggc 960
cactctagtt acactcctct tcctgggtcc aattattcag aaggatggca catttcctag 1020
aggcagaatc tacaacttcc actccaagtg agaaggagrt tcaaactcaa tgrtgstacc 1080
awgcctctcc aacatcttca anccccctgac attattt                         1117

<210> 14
```

```
<211> 885
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (869)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (884)
<223> n equals a,t,g, or c

<400> 14
gtggtggctc gtttcatccg catctaccca ctcacctgga atggcagcct gtgcatgcgc 60
ctggaggtgc tggggtgctc tgtggcccct gtctacagct actacgcaca gaatgaggtg 120
gtggccaccg atgacctgga tttccggcac cacagctaca aggacatgcg ccagctcatg 180
aaggtggtga acgaggagtg ccccaccatc acccgcactt acagcctggg caagagctca 240
cgaggcctca agatctatgc catggagatc tcagacaacc ctggggagca tgaactgggg 300
gagcccgagt tccgctacac tgctgggatc catggcaacg aggtgctggg ccgagagctg 360
ttgctgctgc tcatgcagta cctgtgccga gagtaccgcg atgggaaccc acgtgtgcgc 420
agctggtgca ggacacacgc atccacctgg tgccctcact gaaccctgat ggctacgagg 480
tggcagcgca gatgggctca gagtttggga actgggcgct gggactgtgg actgaggagg 540
gctttgacat ctttgaagat ttcccggatc tcaactctgt gctctgggga gctgaggaga 600
ggaaatgggt cccctaccgg gtccccaaca ataacttgcc catccctgaa cgctaccttt 660
cgccagatgc cacggtatcc acggaggtcc gggccatcat tgcctggatg gagaagaacc 720
ccttcgtgct gggagcaaat ctgaacggcg gcgagcggct agtatcctac ccctacgata 780
tggcccgcac gccttaccca ggagcagctg ctggccgcac catggcagca rcccgggggg 840
aggatgagga cgaggtytcc raggcccang agattccaga ccang                885

<210> 15
<211> 1024
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (938)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1005)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1012)
<223> n equals a,t,g, or c
```

```
<220>
<221> misc feature
<222> (1019)
<223> n equals a,t,g, or c

<400> 15
cttgcctttc ccagaaggct gtgcgtgctc ctcgcttyct ccgcggtctt ccgagcggtc 60
gcgtgaactg cttcctgcag gctggccatg gcgcttcacg ttcccaaggc tccgggcttt 120
gccagatgct caaggaggga gcgaaacact tttcaggatt agaagaggct gtgtatagaa 180
acatacaagc ttgcaaggag cttgcccaaa ccactcgtac agcatatgga ccaaatggaa 240
tgaacaaaat ggttatcaac cacttggaga agttgtttgt gacaaacgat gcagcaacta 300
ttttaagaga actagaagta cagcatcctg ctgcaaaaat gattgtaatg gcttctcata 360
tgcaagagca agaagttgga gatggcacaa actttgttct ggtatttgct ggagctctcc 420
tggaattagc tgaagaactt ctgaggattg gcctgtcagt ttcagaggtc atagaaggtt 480
atgaaatagc ctgcagaaaa gctcatgaga ttcttcctaa tttggtatgt tgttctgcaa 540
aaaaccttcg agatattgat gaagtctcat ctctacttcg tacctccata atgagtaaac 600
aatatggtaa tgaagtattt ctggccaagc ttattgctca ggcatgcgta tctatttttc 660
ctgattccgg ccatttcaat gttgataaca tcagagtttg taaaattctg ggctctggta 720
tcagttcctc ttcagtattg catggcatgg tttttaagaa ggaaaccgaa gtgatgtaac 780
atctgtcaaa gatgcaaaaa tagcagtgta ctcttgtcct tttgatggca tgataacaga 840
aactaaggga acagtgttga taaagactgc tgaagrattg atgaatttta gtaagggagr 900
agaaacctca tggrtgcaca agtcaaagct attgctgnta ctggtgcaat gtcgagtaca 960
ggtggcaagt ggcagacatg gtctcatatg caataaatta attcntgtag gnggtaacnc 1020
aaat                                                              1024

<210> 16
<211> 545
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (45)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (403)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (476)
<223> n equals a,t,g, or c

<220>
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```
<221> misc feature
<222> (507)
<223> n equals a,t,g, or c

<400> 16
cccgactcac taccccccccc ctccccccgc ctgccggccn ccggnccgga attcccgggt 60
cgacccacgc gtccggagag gagccccagc cttgggattc ccaagtgttt tcattcagtg 120
atcaggactg aacacagagg actcaccatg gagtttgggc tgagctggat tttccttgct 180
gctattttaa aaggtgtcca gtgtgaggtg cagctggtgg agtctggggg aggcttggta 240
aagcctgggg ggtcccttag actctcctgt gcagcctctg gattcacttt cagtaacgcc 300
tggatgagct gggtccgcca ggctccaggg aaggggctgg agtgggttgg ccgtattaaa 360
agcaaaactg atggtgggac aacagactac gctgcacccg tgnaaaggca gattcaccat 420
ctcaagagat gattcaaaaa acacgytgta tytgcaaatg aacagcctga aaaccngagg 480
acacagccgt gtattactgt accacangac ccctaattac tatgatagta rtgcaaaaag 540
ctttt                                                             545

<210> 17
<211> 623
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (613)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (616)
<223> n equals a,t,g, or c

<400> 17
cggattcgcg gccgntcgac gccgagctgg gtgcggtgag gcgcgcagat caccgcggtt 60
cctgggcagg gcacggaagg ctaagcaagg ctgacctgct gcagctcccg cctcgtgcgc 120
tcgccccacc cggccgccgc ccgagcgctc gagaaagtcc tctcgggaga agcagcgcct 180
gttcccgggg cagatccagg ttcaggtcct ggctataagt caccatggca cagcaagctg 240
ccgataagta tctctatgtg gataaaaact tcatcaacaa tccgctggcc caggccgact 300
gggctgccaa gaagctggta tgggtgcctt ccgacaagag tggctttgag ccagccagcc 360
tcaaggagga rgtgggcgaa gaggccatcg tggagctggt ggagaatggg aagaaggtga 420
aggtgaacaa ggatgacatc cagaagatga acccgcccaa gttctccaag gtggaggaca 480
tggcagagct cacgtgcctc aacgaagcct cggtgttgca caacctcaag gagcgttact 540
actcagggct catctacgta agtggctgcc gtggcacccc gcaggctggg tctgagggct 600
ccgaggtggg ggnggnggcg ggt                                         623

<210> 18
<211> 559
```

```
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (371)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (531)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (544)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (547)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (556)
<223> n equals a,t,g, or c

<400> 18
cccacgcgtc cgcccacgcg tccggtgaga taggtaggca agtgtggaca aagataaaac 60
tgaaaaacca ctgcaaaggt tgaggtaaga caccataagc cgctgaacta agacaaagtc 120
attagtaatt ttaaaatgag grtgggaatt aactaacaga actgatagga agtgttaaca 180
tacaacaggg gagtctaaga tggcttccaa ttttcactta gaggggtaag ggtaccatta 240
acttaagatc attaatacag raaaattaat cagatttgga gtttaccaag gtttgctttt 300
ggttgtaaca atgatatatg ataaaattaa atgrataaat aagtgratgc actggtgaat 360
taatgagctg ntctcattaa gaccagagta cttatttata acaaaagtaa cttttccctt 420
tccctgggta catcaaactg tactccacag ataacagaca ccagtgagtt tttcatggtt 480
aaaaaagccc caactttgac ctataaatgt ggaccaagaa attaaaataa nctggaacca 540
gcgngcnacg gtattngga                                              559

<210> 19
<211> 1355
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (55)
<223> n equals a,t,g, or c

<220>
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<221> misc feature
<222> (1045)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1355)
<223> n equals a,t,g, or c

<400> 19
cagcccatgg tgtcacctcg gccccggaca acaggcccgc cttgggctcc accgnccctc 60
cagtccacaa tgtcacctcg gcctcaggct ctgcatcagg ctcagcttct actctggtgc 120
acaacggcac ctctgccagg gctaccacaa ccccagccag caagagcact ccattctcaa 180
ttcccagcca ccactctgat actcctacca cccttgccag ccatagcacc aagactgatg 240
ccagtagcac tcaccatagc acggtacctc ctctcacctc ctccaatcac agcacttctc 300
cccagttgtc tactggggtc tctttctttt tcctgtcttt tcacatttca aacctccagt 360
ttaattcctc tctggaagat cccagcaccg actactacca agagctgcag agagacattt 420
ctgaaatgtt tttgcagatt tataaacaag gggtttttct gggcctctcc aatattaagt 480
tcaggccagg atctgtggtg gtacaattga ctctggcctt ccgagaaggt accatcaatg 540
tccacgacgt ggagacacag ttcaatcagt ataaaacgga agcagcctct cgatataacc 600
tgacgatctc agacgtcagc gtgagtgatg tgccatttcc tttctctgcc cagtctgggg 660
ctggggtgcc aggctggggc atcgcgctgc tggtgctggt ctgtgttctg gttgcgctgg 720
ccattgtcta tctcattgcc ttggctgtct gtcagtgccg ccgaaagaac tacgggcagc 780
tggacatctt tccagcccgg gatacctacc atcctatgag cgagtacccc acctaccaca 840
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caggtaatgg tggcagcagc ctctcttaca caaacccagc agtggcagcc acttctgcca 960
acttgtaggg gcacgtcgcc cgctgagctg agtggccagc cagtgccatt ccactccact 1020
caggttcttc agggccagag ccctngcacc ctgtttgggc tggtgagctg ggagttcagg 1080
tgggctgctc acagctcctt cagaggcccc accaatttct cggacacttc tcagtgtgtg 1140
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ggactggccc agagagccct gagatagcgg ggatcctgaa ctggactgaa taaaacgtgg 1260
tctcccactg aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1320
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaan                            1355

<210> 20
<211> 1280
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1043)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1162)
<223> n equals a,t,g, or c

<400> 20
aattcggcac gagccttacc caggtcctgc tcggggctgg ggagaacacc aaaacaaacc 60
```

tggagagcat cctctcttac cccaaggact tcacctgtgt ccaccaggcc ctgaagggct 120
tcacgaccaa aggtgtcacc tcagtctctc agatcttcca cagcccagac ctggccataa 180
gggacacctt tgtgaatgcc tctcggaccc tgtacagcag cagccccaga gtcctaagca 240
acaacagtga cgccaacttg gagctcatca acacctgggt ggccaagaac accaacaaca 300
agatcagccg gctgctagac agtctgccct ccgatacccg ccttgtcctc ctcaatgcta 360
tctacctgag tgccaagtgg aagacaacat ttgatcccaa gaaaaccaga atggaaccct 420
ttcacttcaa aaactcagtt ataaaagtgc ccatgatgaa tagcaagaag taccctgtgg 480
cccatttcat tgaccaaact ttgaaagcca aggtggggca gctgcagctc tcccacaatc 540
tgagtttggt gatcctggta ccccagaacc tgaaacatcg tcttgaagac atggaacagg 600
ctctcagccc ttctgttttc aaggccatca tggagaaact ggagatgtcc aagttccagc 660
ccactctcct aacactaccc cgcatcaaag tgacgaccag ccaggatatg ctctcaatca 720
tggagaaatt ggaattcttc gatttttctt atgaccttaa cctgtgtggg ctgacagagg 780
acccagatct tcaggtttct gcgatgcagc accagacagt gctggaactg acagagactg 840
gggtggaggc ggctgcagcc tccgccatct ctgtggcccg caccctgctg gtctttgaag 900
tgcagcagcc cttcctcttc rtgctctggg accagcagca caagttccct gtcttcatgg 960
ggcgagtata tgaccccagg gcctgagacc tgcaggatca ggttagggcg agcgctacct 1020
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cctcctgcct caggtgtccg ctatccacca aaagggctcc ctgagggtct gggcaaggga 1140
cctgcttcta ttagcccttc tnccatgccc tgccatgctc tccaaaccac tttttgcagc 1200
tttctctagt tcaagttcac cagactctat aaataaaacc tgacagacca tgaaaaaaaa 1260
aaaaaaaaac tcaagactag 1280

<210> 21
<211> 1191
<212> DNA
<213> Homo sapiens

<400> 21
gcaattcctt ctggcttcct gtgacctcac gcaagaaaag gttgtgtact aaatgaatct 60
gctttaactt gctctccttc ctcggggatc acaccttttt aagaaagcct gtcccttacc 120
ttgaagcaca aacatattct catttttatt ctcccaatac cttgaaggtt ttcttctgca 180
catgtatttg tttgatctgc cttttgtgcg tggggtggga gttaggtagg aatcttaaag 240
tggagagcca gtttcttccc aaattactga cctaacccat ccttaacccc cagttcaagg 300
ccacctttgt gatagtgaag cttccacatg ctcactcagc cccttctgct ctctcttctt 360
ctctactgtg catgtcggct tgtacttttg ccagtttctc taaagacaca accagagtgg 420
ggtggctgtg tgtgcacaac ttcaacttta catgtggggc tgagtcccta tgttgtatat 480
ccttgtgcaa aagcacaata tgttaattgc tatagctttt aaaaaaataa ttaatagttt 540
ttcataatca aattttcttg ctttttttgtt ttttcaaaaa agcatacttt tattgaagaa 600
taaacccctt atatatgtac acttatttat aactatgaac gcctgaacta ggatagaaat 660
gcattgtgta tattacaaaa cataacaaaa ataatagggg tagggaggtg cagatgttgg 720
tcaaaggata taaacctgca gttctatgat gaataagttc tggacatctg gaatacagca 780
tggtgactat acttagtaat actatattgt acacttgaag cttactgaaa gagtaaatct 840
caagtgttct caccacacaa acccaaaggt aactatgttc tcaccacaca aacccaaagg 900
gaactatgta ttaattagct tgattgtggt aaccatttca caatgtatac atttgccaaa 960
acattatgtt gtatacctgg aatatataat tttatttatc aattatacct caataaagct 1020
gaaagagggg attactaatt cccacaaaat acagatttaa caaaaacttt tattcaacaa 1080
acagtgctat gaagttgtaa attggaaaca aaagaaataa aatttcatcc acagtcttct 1140
catcaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaactcgtag g 1191

<210> 22
<211> 853

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<212> DNA
<213> Homo sapiens

<400> 22
cttacacagc agcaacagcc tgctacaggg ccacagccat ctctgggagt tagttttgga 60
acgccattcg gctcaggtat tggcactggc ttgcaatcaa gtggcttagg ttcttcaaac 120
cttggaggat ttggaactag ctctggtttt ggatgcagca ccacaggggc ctccacattt 180
ggatttggaa caacaaataa accctcagga agtcttagtg caggctttgg cagctcaagt 240
acatctgggt ttaacttcag caatcctggc atcacggcat cagctggttt gacttttggg 300
gtgtccaatc ctgcctctgc aggttttgga acaggaggac aactccttca gttgaagaaa 360
cctccagctg graacaaaag aggaaaaaga taaacatggg ttgatgtgtt gagagaatcc 420
atagcagcac cgttcattct atgagtctat ttttctaatg atgcagtaat taaattgcat 480
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gtttgccata ctgaacawct tttttcttgt ggaatttaaa gtccagctgt gttttctttt 600
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<210> 23
<211> 474
<212> DNA
<213> Homo sapiens

<400> 23
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<210> 24
<211> 2280
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<400> 24
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aagtgacagt ggaactgcgg aagaacaaaa gagatgaaca cttattgaaa aagagaaatg 240
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<210> 25
<211> 1061
<212> DNA
<213> Homo sapiens

<400> 25
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atggcaggct ctgaagagct ggggctccgg gaagacacgc tgagggtcct agctgccttc 180
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<210> 26
<211> 1572
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1491)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1527)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1555)
<223> n equals a,t,g, or c

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<210> 27
<211> 2005
<212> DNA
<213> Homo sapiens

<220>
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<222> (1976)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1977)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1978)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1979)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1986)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1988)
<223> n equals a,t,g, or c

<400> 27
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<210> 28
<211> 1408
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

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<210> 29
<211> 917
<212> DNA
<213> Homo sapiens

<400> 29
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<210> 30
<211> 577
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (501)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (534)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (568)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (575)
<223> n equals a,t,g, or c

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<210> 31
<211> 2059
<212> DNA
<213> Homo sapiens

<400> 31
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ggtggccctg cactgcacca atggctctgt tgtgtaccat gaggttctca atgccatgga 1860
gtgcaaatgc tcccccagga agtgcagcaa gtgaggctgc tgcagctgca tgggtgcctg 1920
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aaaaaaaaaa aaaaaaaaa 2059

<210> 32
<211> 549
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (337)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (378)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (497)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (537)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (546)
<223> n equals a,t,g, or c

<400> 32
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acttgccagc gccctagcgc ccgctccttt cgctttcttc ccttcctttc tcgccacgtt 480
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ctttanggt 549

<210> 33
<211> 841
<212> DNA
<213> Homo sapiens

<400> 33
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gcagccccac agaccatggt catgccaggt ggttgtacta caatcccaga gtcagaccta 180
gaagaaagat cagtagaaca agactctaca gaactgttta ccaaccacag acatctcact 240
gcagagacac ccaggcctgt ttcaccccctc caaggagtct cggaataatt ccaagtagag 300
ttgtttggtt gagaggaaca tccccatctc aaggccgaac ctgtgtgaac ctcatgccaa 360
gcacagatat arggctggcg caggtgcttc cyaaagctya ccttcctgga gatgacatgc 420
atagaaagag gggttgggac tttttacttc actaggagaa cttgtaacac catggggaag 480
tcagctgaaa cttgtcttgt tttgccagga aaggaagtag ttgcctttgg tcatccatct 540
gctaatagtc acagaataca gtgaaatgac atagttttgg gttagatttt ataatgcaaa 600
gattcagatc caaaataatt tcataccccа tttttcaca gaattcttat atagtaaatg 660
tatcaagttt aataaagcat ctcattgtca aataatatct tggattttat ttataattag 720
agggatttat gagtgattgc tctacattat ttcttcaaag gaaaggaaag gaattgaaga 780
ctttgctact ctctggtaag acttgaatgt gattatttta taaataaaag aaccactatg 840
a 841

<210> 34
<211> 863
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (44)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (58)
<223> n equals a,t,g, or c

<400> 34
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agcggagcca acatgccagt ggcccggagc tgggtttgtc gcaaaactta tgtgaccccg 180
cggagaccct tcgagaaatc tcgtctcgac caagagctga agctgatcgg cgagtatggg 240
ctccggaaca aacgtgaggt ctggagggtc aaatttaccc tggccaagat ccgcaaggcc 300
gcccgggaac tgctgacgct tgatgagaag gacccacggc gtctgttcga aggcaacgcc 360
ctgctgcggc ggctggtccg cattggggtg ctggatgagg gcaagatgaa gctggattac 420
atcctgggcc tgaagataga ggatttctta gagagacgcc tgcagaccca ggtcttcaag 480
ctgggcttgg ccaagtccat ccaccacgct cgcgtgctga tccgccagcg ccatatcagg 540
gtccgcaagc aggtggtgaa catcccgtcc ttcattgtcc gcctggattc ccagaagcac 600
atcgacttct ctctgcgctc tccctacggg ggtggccgcc cgggccgcgt gaagaggaag 660
aatgccaaga agggccaggg tggggctggg gctggagacg acgaggagga ggattaagtc 720
cacctgtccc tcctgggctg ctggattgtc tcgttttcct gccaaataaa caggatcagc 780
gctttacaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa ttt 863

<210> 35
<211> 1230
<212> DNA
<213> Homo sapiens

<400> 35
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cctgcagcgc ttggtagagc agctcaagtt ggaggctggc gtggagagga tcaaggtctc 120
tcaggcagct gcagagcttc aacagtactg tatgcagaat gcctgcaagg atgccctgct 180
ggtgggtgtt ccagctggaa gtaacccctt ccgggagcct agatcctgtg ctttactctg 240
aagactctag gagagaagtt tgctgaggaa tgccttcaag cacaaagtga tgaatgactg 300
ccttcaagtc tcaagaaaac acttttccct aacttttaga gatatttcag ccctttcctg 360
tggcctggtc ctatagccaa aatcacagat attcatgagt ttctacttga gtgagaaaac 420
tgggtgaagg aatagaattt taaatagtaa taactgcttg tttttttgt gcaagtactt 480
ttatacataa gataaacaaa aaccttacca ccaaacatac caaaatgcac ctctttcata 540
agtgagttac taagatttct atacctggaa tatcatgtat gtttcattta ctggatgttt 600
acattttagg aaggaaaata gttytgttta tttaaacaac tgaatactta taaactgttg 660
ttcctggaag ttatttattc cataaaaaat ttgttctttt ctcatgaatt tataattcct 720
aaatgaagac cagaaagtac aaattgctgg gaggaagaat aggctttatt aatcaactga 780
tgtcttgatt tttctaaatg ggaagattgc tttattttta acactaatta tgggagcaga 840
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attaatcatt tttctatgac agcaaaaaa                                  1230

<210> 36
<211> 640
<212> DNA
<213> Homo sapiens

<400> 36
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ctatccgcac tagaaagttc atgaccaacc gactacttca gaggaaacaa atggtcattg 180
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aaatgtacaa gaccacaccg gatgtcatct ttgtatttgg attcagaact cattttggtg 300
gtggcaagac aactggcttt ggcatgattt atgattccct ggattatgca aagaaaaatg 360
aacccaaaca tagacttgca agacatggcc tgtatgagaa gaaaaagacc tcaagaaagc 420
aacgaaagga acgcaagaac agaatgaaga aagtcagggg gactgcaaag gccaatgttg 480
gtgctggcaa aaagccgaag gagtaaaggt gctgcaatga tgttagctgt ggccactgtg 540
gatttttcgc aagaacatta ataaactaaa aacttcaaaa aaaaaaaaaa aaaaaaaaaa 600
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaagg                      640

<210> 37
<211> 597
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (556)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (558)
<223> n equals a,t,g, or c

<220>
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<221> misc feature
<222> (567)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (590)
<223> n equals a,t,g, or c

<400> 37
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ccgaggaagc taaggctgcg ttggggtgag gccctcactt catccggcga ctagcaccgc 120
gtccggcagc gccagcccta cactcgcccg cgccatggcc tctgtctccg agctcgcctg 180
catctactcg gccctcattc tgcacgacga tgaggtgaca gtcacggagg ataagatcaa 240
tgccctcatt aaagcagccg gtgtaaatgt tgagcctttt tggcctggct tgtttgcaaa 300
ggccctggcc aacgtcaaca ttgggagcct catctgcaat gtaggggccg gtggacctgc 360
tccagcagct ggtgctgcac cagcaggagg tcctgccccc tccactgctg ctgctccagc 420
tgaggagaag aaagtggaag caaagaaaga agaatccgag gagtctgatg atgacatggg 480
ctttggtctt tttgactaaa cctcttttat aacatgttca ataaaaagct gaactttaaa 540
aaaaaaaaaa aaaaancncg gggggnccg ctttaaaggg tccaagttan gtacggg 597

<210> 38
<211> 624
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (79)
<223> n equals a,t,g, or c

<400> 38
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ggggcgcgcg agctcgcgnt cttcctgacc cccgakcctg gggccgaggc gaaggaggtg 120
gaggagacca tcgagggcat gctcctcagg ctggaagagt tttgcagcct ggctgacctg 180
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acagaaatgc gtggcatcta tgccaaagtg gaccggctag aggccttcgt caagatggtt 300
ggacaccacg tcgccttcct ggaagcagac gtgcttcagg ctgagcggga ccatggggcc 360
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camctgsacc kgtgcccgtg acgtacgagc tgcccacact gtataggacg gaggactatt 480
ttcctgtgga cgccgggkaa gcacagcamc amccccgcac ctgccctcgg cctttgtgag 540
ctttgtggtc ttcccatcag gaacactgga aagtgacatt gtgtacacgc tgcagcttgg 600
gggtttttc tttgtattgc tgtt 624

<210> 39
<211> 1029
<212> DNA
<213> Homo sapiens

<400> 39
ggcccctcga gggatcctct agagcggccg ccgactagtg agctcgtcga cccgggaatt 60

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cctaattgaa tcgargarcc cagggacaca cgccttcagg tttgctcarg ggttcatatt 300
tggtgcttag acaaattcaa aatgaggaaa catcggcact tgcccttagt ggccgtcttt 360
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ctggtgttca tcccagctga gttccgagcc gccccattgc aaggcatgct gcctggcttg 960
ctggcacctc tcaggaccct ctctggaacc cctgaagttc actcaaacaa aagggatatc 1020
atctttctg                                                         1029

<210> 40
<211> 1107
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1098)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1106)
<223> n equals a,t,g, or c

<400> 40
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gaaaactgcg agccagcatt acccccggga ccattctgat catcctcact ggacgccaca 180
ggggcaaggt gagagtacct gtgcttgggg cgcttcactg cagctgcctg gggtgcctgg 240
tggcaatgcg tttgcacgct aggtgtactt ttcctttatt tacctatgtt tggggcaagg 300
ggaaatgatc tgcaagatac aacttagttg ttgcaaataa gaagtgtaat ccatggtgat 360
ttattagcca tttcctgctg ttgatwatgt tacacatgty catttactca aaaacgtgtt 420
tatgtctgga gtactacctt agtagcttgc tgtggttgct tccagaactg ccgagctgta 480
tacatataca tgtagaaatt tccttacccm aatttagatg cctgtgawtt tawgaatcag 540
aagycagttt taawtgcmga aaacyaatta ttytcttttt amcttacaag agggtggttt 600
tcctgaagca gctggctagt ggcttattac ttgtgactgg acctctggtc ctcaatcgag 660
ttcctctacg aagaacacac cagaaatttg tcattgccac ttcaaccaaa atcgatatca 720
gcaatgtaaa aatcccaaaa catcttactg atgcttactt caagaagaag aagctgcgga 780
agcccagaca ccaggaaggt gagatcttcg acacagaaaa agagaaatat gagattacgg 840
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acaaattggt gttctaaatg tcttaagaac ctaattaaat agctgactac aaaaaaaaaa 1020
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa ccccgggggg 1080
gggcccggtt cccatttngc cctttng 1107

<210> 41
<211> 1051
<212> DNA
<213> Homo sapiens

<400> 41
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agaacaaata ttcggtgctt ttacctacct acaacgagcg cgagaacctg ccgctcatcg 120
tgtggctgct ggtgaaaagc ttctccgaga gtggaatcaa ctatgaaatt ataatcatag 180
atgatggaag cccagatgga acaagggatg ttgctgaaca gttggagaag atctatgggt 240
cagacagaat tcttctaaga ccacgagaga aaaagttggg actaggaact gcatatattc 300
atggaatgaa acatgccaca ggaaactaca tcattattat ggatgctgat ctctcacacc 360
atccaaaatt tattcctgaa tttattagga agcaaaagga gggtaatttt gatattgtct 420
ctggaactcg ctacaaagga aatggaggtg tatatggctg ggatttgaaa agaaaaataa 480
tcagccgtgg ggccaatttt ttaactcaga tcttgctgag accaggagca tctgatttaa 540
caggaagttt cagattatac cgaaaagaag ttctagagaa attaatagaa aaatgtgttt 600
ctaaaggcta cgtcttccag atggagatga ttgttcgggc aagacagttg aattatacta 660
ttggcgaggt tccaatatca tttgtggatc gtgtttatgg tgaatccaag ttgggaggaa 720
atgaaatagt atctttcttg aaaggattat tgactctttt tgctactaca taaaagaaag 780
atactcattt atagttacgt tcatttcagg ttaaacatga aagaagcctg gttactgatt 840
tgtataaaat gtactcttaa agtataaaat ataaggtaag gtaaatttca tgcatctttt 900
tatgaagacc acctatttta tatttcaaat taaataattt taaagttgct ggcctaatga 960
gcaatgttct caattttcgt tttcattttg ctgtattgag acctataaat aaatgtatat 1020
ttttttttgc ataaarwaaa aaaaaaaaac c 1051

<210> 42
<211> 2192
<212> DNA
<213> Homo sapiens

<400> 42
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gctggacccc ctggccccat tggtaatgtt ggtgctcctg gagccaaagg tgctcgcggc 120
aggctggtcc ccctggtgct actggtttcc ctggtgctgc tggccgagtc ggtcctcctg 180
gcccctctgg aaatgctgga ccccctggcc ctcctggtcc tgctggcaaa gaaggcggca 240
aaggtccccg tggtgagact ggccctgctg gacgtcctgg tgaagttggt ccccctggtc 300
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gaccccctgg tgaatctgga cgtgaggggg ctcctggtgc cgaagttccc ctggacgaga 600
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tcctggtgct cctggtgccc ctggccccgt tggccctgct ggcaagagtg gtgatcgtgg 720
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gaaggctcac gatggtggcc gctactaccg ggctgatgat gccaatgtgg ttcgtgaccg 1200
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tgaatacaaa accaccaaga cctcccgcct gcccatcatc gatgtggccc ccttggacgt 1860
tggtgcccca gaccaggaat tcggcttcga cgttggccct gtctgcttcc tgtaaactcc 1920
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ttggaaaata tttttttcct ttgcattcat ctctcaaact tagtttttat ctttgaccaa 2100
ccgaacatga ccaaaaacca aaagtgcatt caaccttacc aaaaaaaaaa aaaaaaaaaa 2160
actcgggggg ggcccggtac caattggcct aa 2192

<210> 43
<211> 353
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (37)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<400> 43
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ccgggtcgac ccacgcgtcc ggtggggctt caccaagttc aatgctgatg aatttgaaga 120
catggtggct gaaaagcggc tcatcccaga tggctgtggg gtcaagtaca tccccagtcg 180
tggccctctg gacaagtggc gggccctgca ctcatgaggg cttccaatgt gctgcccccc 240
tcttaatact caccaataaa ttctacttcc tgtccaaaaa aaaaaaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaanaa aag 353

<210> 44
<211> 3490
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (782)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1311)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2298)
<223> n equals a,t,g, or c

<400> 44
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acgcgtccgg tgaaaactgt tgcattattc ctccatcctg tctggaatac accaggtcaa 120
caccagagat ctcagatcag aatcagagat ctcagagggg aataagttca tcctcatggg 180
atggtgaggg gcakgaaagc ggctgggctc ttggacacct ggttctcaga gaaccctgtg 240
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<210> 45
<211> 781
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (750)
<223> n equals a,t,g, or c

<400> 45
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<210> 46
<211> 1431
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<212> DNA
<213> Homo sapiens

<400> 46
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<210> 47
<211> 1913
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1878)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1896)
<223> n equals a,t,g, or c

<220>
<221> misc feature

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<222> (1905)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1907)
<223> n equals a,t,g, or c

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<210> 48
<211> 1761
<212> DNA
<213> Homo sapiens

<400> 48
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<210> 49
<211> 956
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (37)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (352)
<223> n equals a,t,g, or c

<400> 49
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<210> 50
<211> 563
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (510)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (519)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (530)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (558)
<223> n equals a,t,g, or c

<400> 50
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<210> 51
<211> 3215
<212> DNA
<213> Homo sapiens
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<220>
<221> misc feature
<222> (3196)
<223> n equals a,t,g, or c

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tcttagaaga tagcatggga ggtgaggatt ccaaaaacat tttattttta aaatatcctg 2640
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<210> 52
<211> 626
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (571)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (572)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (573)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (618)
<223> n equals a,t,g, or c

<400> 52
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ctggcccggg catcagggaa ctatgccacc gttatctccc acaaccctga gaccaagaag 180
acccgtgtga agctgccctc cggctccaag aaggttatct cctcagccaa cagagctgtg 240
gttggtgtgg tggctggagg tggccgaatt gacaaaccca tcttgaaggc tggccgggcg 300
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cctgtggagc atccttttgg aggtggcaac caccagcaca tcggcaagcc ctccaccatc 420
cgcagagatg cccctgctgg ccgcaaagtg ggtctcattg ctgcccgccg gactggacgt 480
ctccggggaa ccaagactgt gcaggagaaa gagaactagt gctgagggcc tcaataaagt 540
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ggggccaact taccttnca tgcaaa 626

<210> 53
<211> 920

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<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (617)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (621)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (725)
<223> n equals a,t,g, or c

<400> 53
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ctctgctact atgatcccaa ttcagatgct gacagtgaaa ccgtgaaggc agcaaaggtg 120
tggaaactcg cagagtcctg gtgggtgagc agcagcagtg ccasgatgcc aagagccagc 180
agaaggagca gatgttgctg ctggagaaka agagtgctgc ttactcccag gtgcttctcc 240
gctgcctcac tttgctgcag aggcttcttc aagaacaccg gctgaagact caatccgagc 300
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caagacaggt cctgaactcc tatgaggtcc ttggggagga gtttgacagg ctggtgaaag 540
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<210> 54
<211> 1090
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (1024)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1034)
<223> n equals a,t,g, or c
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<400> 54
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gtacacagaa atgttcaaaa tcatagtttt aatgtgtttt gaaaaggcca cacaattata 240
ctttatcttt tcttaataat cctgcaaatc tctgccctgg aatccgaaat ctgaaaatgt 300
actggcttga acaaaatttg ttttgtgtgt tagagttata aatcattaat ctttatttcg 360
ggtggtttac gtttatgcca gttcctttat atttaaattt cttgttttat atattttgaa 420
tgtctttata gatttcttta aatttcctta tagaaccatt aatagaaaat cattacattt 480
aaaatatacc ttacagcaaa agcatccaaa taagtatagg gtttatgtcc ttatttttct 540
ttcagctgaa tacgaatgaa cacagtggtg gaatttctga agggaagtga tgaaattata 600
tttatttcag tgggcacttt tccattttac cactgtacca ttatttggtt cctggagtta 660
tacactaatt ttcagtatat tactgttaaa ttaccaacac aaggcaattt atttgaaaga 720
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aattgcatga agtggattga tcatgagcaa atgatgtgct tatttctccc tcactgttga 960
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agtngtatgt attnctctta tacattagat acctatattt aaatgaaagg gccaatttgt 1080
aaacatatac 1090

<210> 55
<211> 1464
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (766)
<223> n equals a,t,g, or c

<400> 55
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gacgctctca gctctcggcg cacggcccag cttccttcaa aatgtctact gttcacgaaa 120
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tcaaagccta tactaacttt gatgctgagc gggatgcttt gaacattgaa acagccatca 240
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agagacagga tattgccttc gcctaccaga gaaggaccaa aaaggaactt gcatcagcac 360
tgaagtcagc cttatctggc cacctggaga cggtgatttt gggcctattg aagacacctg 420
ctcagtatga cgcttctgag ctaaaagctt ccatgaaggg gctgggaacc gacgaggact 480
ctctcattga gatcatctgc tccagaacca accaggagct gcaggaaatt aacagagtct 540
acaaggaaat gtacaagact gatctggaga aggacattat ttcggacaca tctggtgact 600
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ggggcccgka cccattggcc ttag 1464

<210> 56
<211> 985
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (647)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (875)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (962)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (973)
<223> n equals a,t,g, or c

<400> 56
agaagttgct agtgttcaat gcagctgggg tgaaacccca ggggcaaggt ggctggcttt 60
gatctggacg ggacgctcat caccacacgc tctgggaagg tctttcccac tggccccagt 120
gactggagga tcttgtaccc agagattccc cgtaagctcc gagagctgga agccgagggc 180
tacaagctgg tgatcttcac caaccagatg agcatcgggc gcgggaagct gccagccgag 240
gagttcaagg ccaaggtgga ggctgtggtg gagaagctgg gggtcccctt ccaggtgctg 300
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gagcaggcca acgacggcac gcccatatcc atcggggaca gcatctttgt gggagacgca 420
gccggacgcc cggccaactg ggccccgggg cggaagaaga aagacttctc ctgcgccgat 480
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<210> 57
<211> 1246
<212> DNA
<213> Homo sapiens

<400> 57
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gccattggaa ggggcatatg tgtgttgctg ggtatttccc tggaggatac gcagaaggaa 180
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<210> 58
<211> 1966
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1926)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1942)
<223> n equals a,t,g, or c

<400> 58
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cttatnggac tctctgcttt gntatttaaa taaaaaatct tacatc 1966

<210> 59
<211> 1611
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<400> 59
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ggctatcatg tcagtatgat ggctgactct acctctagat gggctgaggc cttagagaaa 240
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aatatttaat tttcaaaaac ataatgatta atgttccaat tatgcatcac ttcccccagk 1560
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<210> 60
<211> 1849
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (100)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (977)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1846)
<223> n equals a,t,g, or c

<400> 60
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gctactacac atcggaaagc aaatcctcct gaggaggcct tgctgaagtt agaaagtgca 540
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aagtgagagt tcatgacaac agaccgtttt ccatttcatc tgtattttat ctccgtgact 1740
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aagggngga 1849

<210> 61
<211> 233
<212> DNA
<213> Homo sapiens

<400> 61
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tattattccc tttgactcac taattacact gctggaatat aaagaaatga tcctaaatat 180
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<210> 62
<211> 2333
<212> DNA
<213> Homo sapiens

<220>
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<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (14)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2327)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2331)
<223> n equals a,t,g, or c

<400> 62
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ggtgcaatcc agtttgtgac tcagtatcag cattcaagtg ggcagagacg catccgagtg 180
accaccattg ctaggaactg ggcagatgct caaactcaaa tccaaaacat tgctgcatct 240
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gaagaaggtc cagatgtgct taggtggctg gacagacagc tcattcgact gtgtcagaaa 360
tttggagaat atcataaaga tgacccaagt tccttcagat tttcagaaac tttctccctt 420
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<210> 63
<211> 1470
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1410)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1414)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1419)
<223> n equals a,t,g, or c

<400> 63
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<210> 64
<211> 939

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<212> DNA
<213> Homo sapiens

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<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<400> 64
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<210> 65
<211> 2068
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<400> 65
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acaagccctg aacgagcacc tcagcacgcg tagtatgtcc aggggtactc actgtcccag 180
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<210> 66
<211> 1391
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (20)
<223> n equals a,t,g, or c
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<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (27)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1343)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1358)
<223> n equals a,t,g, or c

<400> 66
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gttagcctaa gtcacttcca ccctccaatg ttgtgaatgc agtctctagc attcgctatt 180
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<210> 67
<211> 659
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (139)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (475)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (585)
<223> n equals a,t,g, or c

<400> 67
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<210> 68
<211> 2981
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2858)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2948)
<223> n equals a,t,g, or c

<400> 68
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gaaacttact tgaagaagat tcctggattt tgtgaagggg gatttaaaat ccatgaggct 360

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gagatgggaa aatgagacga cattgctgga gtagataaaa ctgcatgtta aaggcaggaa 2940
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<210> 69
<211> 603
<212> DNA
<213> Homo sapiens

<220>
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<221> misc feature
<222> (584)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (590)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (595)
<223> n equals a,t,g, or c

<400> 69
tcgacccacg cgtccggcac cgggggaaca aggtcgtgaa aaaaaaggtc ttggtgaggt 60
gccgccattt catctgtcct cattctctgc gcctttcgca gagcttccag cagcggtatg 120
ttgggccaga gcatccggag ttcacaacct ctgtggtccg tagagccact atgaggaggg 180
ccctgggaag aatttgccat tttcagtgkg taaggggcac ggcttcgttg ggggaggggg 240
cgcttggctg tgactcgcgc acctgcaagg ccgcctccgg gctgtggcgt gggagatgat 300
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agctgggcat cctagcgcgt accgctaaag gaatgggcag gtagatccgg aagccctgcc 420
tccatcagcc acctgacgcc ccctcccccg ccccgcagaa agccctgaga tggcyccggg 480
aggccacggc tgtaggtgtg ttggttaaat ccgagctgga ggtcatcgga cccgaaatga 540
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agc 603

<210> 70
<211> 1101
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (195)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1080)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1081)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1090)
<223> n equals a,t,g, or c

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<400> 70
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ggtgcctatt tggttatgac aaaagatatg gctaattttt attttgaaaa gtttgaataa 180
acttagtttt ctctntttcc acttgcaaag agttttgatg atggagacta ttttcctgtg 240
tggggcacat gccttggatt tgaagagctt tcactgctga ttagtggaga gtgcttatta 300
actgccacag atactgttga cgtggcaatg ccgctgaact tcactggagg tcaattgcac 360
agcagaatgt tccagaattt tcctactgag ttgttgctgt cattagcagt agaacctctg 420
actgccaatt tccataagtg gagcctctcc gtgaagaatt ttacaatgaa tgaaaagtta 480
aagaagtttt tcaatgtctt aactacaaat acagatggca agattgagtt tatttcaaca 540
atggaaggat ataagtatcc agtatatggt gtccagtggc atccagagaa agcaccttat 600
gagtggaaga atttggatgg catttcccat gcacctaatg ctgtgaaaac cgcattttat 660
ttagcagagt tttttgttaa tgaagctcgg aaaaacaacc atcattttaa atctgaatct 720
gaagaggaga aagcattgat ttatcagttc agtccaattt atactggaaa tatttcttca 780
tttcagcaat gttacatatt tgattgaaag tcttcaattt gttaacagag caaatttgaa 840
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gattcttttc tataatgtgc ctggctctga ttcttcattc tgtatgtgac tatttatata 960
acattagata attaaatagt gagacataaa tagagtgttt ttcatggaaa agccttctta 1020
tatctgaaga ttgaaaaaaa taaatttact gaaatacaaa aaaaaaaaaa aaaaaaaatn 1080
nctcggtcgn caagggaatt c                                            1101

<210> 71
<211> 714
<212> DNA
<213> Homo sapiens

<400> 71
ggcagagaaa ctgtggcggg atagttttcg ggtccttgtc cagtgaacac cctcggctgg 60
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gacagtgttc caggcactta cagaaaagtg gtggctgctc gagcccccag aaaggtgctt 180
ggttcttcca cctctgccac taattcgaca tcagtttcat cgaggaaaga gcatgtcctt 240
tgcaacctga tcacacaaat gatgaaaaag aatagaactt tctcattcat ctttgaataa 300
cgtctccttg tttaccctgg tattctagaa tgtaaattta cataaatgtg tttgttccaa 360
ttagctttgt tgaacaggca tttaattaaa aaatttaggt ttaaatttag atgttcaaaa 420
gtagttgtga aatttgagaa tttgtaagac taattatggt aacttagctt agtattcaat 480
ataatgcatt gtttggtttc ttttaccaaa ttaagtgtct agttcttgct aaaatcaagt 540
cattgcattg tgttctaatt acaagtatgt tgtatttgag atttgcttag attgttgtac 600
tgctgccatt tttattggtg tttgattatt ggaatggtgc catattgtca ctccttctac 660
ttgctttaaa aagcagagtt agatttttgc acattaaaaa attcagtatt aatt       714

<210> 72
<211> 2890
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (555)
<223> n equals a,t,g, or c
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<220>
<221> misc feature
<222> (2853)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2882)
<223> n equals a,t,g, or c

<400> 72
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ttcaagaaga agctcttctg gagggcagtg gtggccgagt tcctggccac gaccctcttt 120
gtcttcatca gcatcggttc tgccctgggc ttcaaatacc cggtggggaa caaccagacg 180
gcggtccagg acaacgtgaa ggtgtcgctg gccttcgggc tgagcatcgc cacgctggcg 240
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ctcagctgcc agatcagcat cttccgtgcc ctcatgtaca tcatcgccca gtgcgtgggg 360
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ggccgmaatg acctggctga wggtgtgaac ttcgggccar ggcctgggca tcgagatcat 480
cgggaccctc cagctggtgc tatgcgtgct ggctactacc gaccggaggc gccgtgamct 540
tggtggctca gccgnccctt gccatcggcc tctctgtagc ccttgggaca cctcctggct 600
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cacaacttca gcaaccactg gattttctgg gtggggccat tcatcggggg agccctggct 720
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gtgtggacca gcggccaggt ggaggagtat gacctggatg ccgacgacat caactccagg 840
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antcgtgact 2890

<210> 73
<211> 2488
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (277)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (446)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2382)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2412)
<223> n equals a,t,g, or c

<400> 73
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gcacccctct ctctaacaca ggatctgggc atccagncac ggccatgacc cctccaaggc 300
tcttctgggt gtggctgctg gttgcaggaa cccaaggcgt gaacgatggt gacatgcggc 360
tggccgatgg gggcgccacc aaccagggcc gcgtggagat cttctacaga ggccagtggg 420
gcactgtgtg tgaacaacct gtgggnacct gactgatgcc agcgtcgtct gccgggccct 480
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ttaaaattac attgaggttc ctaaaaaaaa aaaaaaaaaa anaaaaaaaa aaaaaaaagg 2400
gsggccgctc tngaggatcc ctcgaggggc ccaagcttac gcgtgcatgc gacgtcatag 2460
ctctctccct ataatggaat cgtattat 2488

<210> 74
<211> 711
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (696)
<223> n equals a,t,g, or c

<400> 74
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acactatcta tgtaaaattc aaaactggaa aagtataaag ggtacagaga gacacctgcc 120
tcccaccgat gtccctcagc ttccacttac cctccaggag aatgaagaat ccctccattg 180
ttggagtcct gtgcacagat tcacaaggac ttaatctggg ttgccgcggg accctgtcag 240
atgagcatgc tggagtgata tctgttctag cccagcaagc agctaagcta acctctgacc 300
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acgatggcat cacggtggca gtgcacaaaa tggcctcttg atgctcatat ctgttcttca 420
gcagcctgtc ataggaactg gatcctacct atgttaatta ccttatagaa ctactaaagt 480
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aattgctttc taatgctcta tggaccgact atcaagatat tagtaagaaa ggatcatgtt 600
ttgaagcagc aggtccaggt cactttgtat atagaatttt gctgtattca ataaatctgt 660
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<210> 75
<211> 906
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (362)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (889)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (894)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (897)
<223> n equals a,t,g, or c

<400> 75
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tgcccctctg agcctcagtc ttctgccagt gacgcaggga gacggcactg actgcctccc 180
aggagcgtcg gtggcctgca gaagatgcgc aggaagctgg gmctcgtgca ggtggagctg 240
gaggaagacg gggcgctggt gtccaagctc ctggagacca tgcatctaac cggtgccgac 300
ttsacaaaca ccttctactt gctgagctcc ttcccagtgg agctagagtc gccaggcctg 360
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ttccggcccm agatggatcc ccggcagcta tccatgatgc tgatgctggc gcagtcaaac 480
ccgcagctgt tcgcgcttat gggcacccgg gcaggcatcg ccagggagct ggagcgtgtg 540
gagcagcagt ctcggctgga gcagctgagt gcggcagagc tgcagagcag gaaccagggc 600
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gtacgtgctg aggaactaca ttcgcgcaga atgccattcg aggttgccga gcgcggggat 780
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cttaca                                                            906

<210> 76
<211> 271
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<400> 76
gaacactcta ctttatgcag gaatagcaga gatgantcat ggttgggaag acactagaat 60
tcagccagga gaatatcatt aaaagaggga gaagggaaaa cagacttttt gtgtggtaca 120
aaaacaaaac cctctgtatc attatgtgaa caacggtgca aaaaagagga gacacagttt 180
acccatgggt agctaactat gatagtgaaa gttgccttga accttgtttt agaaaaatgg 240
caagtgtggg tctcactctt ctagttcctg a                                271

<210> 77
<211> 673
<212> DNA
<213> Homo sapiens

<400> 77
ttcggcacga gggtgaccag cggcgggtca cgtgacgcgg tgcctggcgc cgagcctccc 60
aagatggcgg tgtgcatcgc ggtgattgcc aaggagaatt accccctcta cattcgcagc 120
acccctacgg agaacgagct gaagttccac tacatggtgc acacatctct ggacgtggtg 180
gatgagaaga tctccgcaat ggggaaggcc ctggtcgacc agagggagct gtacctgggc 240
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gaccgcatcc agtccagggc ctttgataac atggtgacgt cgatgatgat acaggtgtgc 480
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cggtctgttc tggttgcctc ttcctgaatg ggacgcctgg ggctttcagg gcaggcagct 600
gtgcatgttc tctcaactaa aggtcttgtg agaggaaaaa aaaaaaaaaa aaaaaaactc 660
gggggggccc cgg                                                    673

<210> 78
<211> 367
<212> DNA
<213> Homo sapiens

<400> 78
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cctctcaaat ctactcagtc aaaagatttt atgcttcaat ttggtcatat gttaagagtt 120
tagcttctaa actgatacct cagtagccca tagtttaaag gagtaaagag tacatggatg 180
cttttggtac tactcagaag ctctgagttt ctgggccact gaaaccctga aaagtagcta 240
aatacgttca cttgctattt taatccatca ctgtagatat gactcagtcc ctttgttatt 300
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ttttctc                                                              367

<210> 79
<211> 1344
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1319)
<223> n equals a,t,g, or c

<400> 79
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<210> 80
<211> 3748
<212> DNA
<213> Homo sapiens

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aaaaaaaaaa aaaaaaaaaa aaaaaacc 3748

<210> 81
<211> 1891
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1869)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1879)
<223> n equals a,t,g, or c

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tttccgttna agtcccccnt taggaccccc g 1891

<210> 82
<211> 1954
<212> DNA
<213> Homo sapiens

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<210> 83
<211> 936
<212> DNA
<213> Homo sapiens

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<222> (895)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (930)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (936)
<223> n equals a,t,g, or c

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<210> 84
<211> 1513
<212> DNA
<213> Homo sapiens

<400> 84
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<210> 85
<211> 1298
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

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<210> 86
<211> 2009
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1955)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1959)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2008)
<223> n equals a,t,g, or c

<400> 86
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<211> 534
<212> DNA
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<220>
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<220>
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<400> 87
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<210> 88
<211> 4302
<212> DNA
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<220>
<221> misc feature
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<223> n equals a,t,g, or c

<220>
<221> misc feature
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<211> 2782
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (743)
<223> n equals a,t,g, or c

<400> 89

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<210> 90
<211> 1037
<212> DNA
<213> Homo sapiens

<400> 90
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<210> 91
<211> 1052
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<221> misc feature
<222> (962)
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<220>
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<222> (965)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<210> 92
<211> 1234
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<210> 93
<211> 1571
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (1497)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1516)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1530)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1546)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1571)
<223> n equals a,t,g, or c

<400> 93
gagcctgatt ccatcaaaaa gaaaggagta aaaagcaagt tacagcccag cagcacatct 60
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aggctctgtc agcttttgtc actccctgat ttcttattct ttgttacctt ttttcgcctg 180
actgattttt acttggcatt taagttcccc ttagcactgc cagattctaa aggttatat 240
tctttttaaa aaagaagaga aagaaagaag gaaagaagac aaagaaagaa taaaaacctc 300
cgagtgttaa ctacttttcc ctttcttctt ttttttataa agaatacatt ctttcacatc 360
ttgaatttct gtgaatttta gtttccattc tttctgcctt tgcaaaccag acacctaaat 420
tatacgtsga agctgttaaa aagttgtttt ttttttttta atggaaaata tccaagaagc 480
agcccaggag tatctgacat ggtggaatgg aatcagttag aaagcgaaga aatcactaaa 540
aaaagttact tcttttttc cccaccagtt ataatcttca accttactag tttataacag 600
tttaatgtcc tatagaagga tcctccacta aagttataat tttaagtata gtcatataga 660
gagatcccta atcccctggg taatctagat actaaaggtg gggaagaaca gtcatattga 720
cattctttaa tccaaaacca ctgtttgaaa ttagtaagga tattttcagc attcccaaaa 780
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ttggggaagt atggatgggt atgctgagac tcaattactc tcttattagc ttccccgttt 1380
ggaagatccc aaacaccaaa gatggaaggt gaaaataaag actgcgtgac cgggaagaaa 1440
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gtttgaatta ctaatagtgg ggaataataa tttcagtttt ggttttaaac atctggnatt 1500
cctaaaaaaa aaaaanaaaa aaaaaaaacn cggggggggg cccggnaccc aattcccccc 1560
aaaggggggg n 1571

<210> 94
<211> 1872
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1271)
<223> n equals a,t,g, or c

<400> 94
gggnancccc cccggggggg aaaacggatg ggccccgggc cccccaaaaa ntacccccga 60
ggtttttttt tttttttttg atttaataaa gttttatttt tccaaatgta cagctggttg 120
gacctattca tgcatcttca ccagcagctg gagcatctcc acccttggta tttctggtgt 180
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accaccgtcc gctgtgagta cttccggggc aagaggcgga gccaggcaga rgaagtccca 540
cggcgaagcg ctcgccctct agcctgaggc ggaagacagg aagyggattc tagttcccaa 600
gccgcaccgc ctaaatactg ccggagtctg cgctagttgt gacgcagtac tatagcgctg 660
ttttcctgca ctgataaacg aaaagcaatc caccaggtct cggcagctaa ctttccggca 720
ctacttatgc ccgagcgtgt cgctcccagt gcgcaagtgc agcaggtggc tgcacggggg 780
gcgcgggagg aggaggagga ggaggaggag gctggggtgg ggccggcggc aagtgctgtg 840
atgcggttcc ggggaggggc cgtcgggtag aggctgaata ccagtttccg agcggcaagg 900
cagcgatggc gatttttagt gtgtatgtgg tgaacaaagc tggcggcttg atttaccagt 960
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gccggccccg cctcacttct aatgagaagc ttatgctggc ctccatgttc cactcgctct 1260

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cagatcctag gcaagctgga atagattctc ttctccgaaa gatttatgag atttactcag 1440
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ataccatggt cttactttcc aactctgtac agatttattt atggaggagc taggtccata 1800
aatgttgtaa taaatattcc tttgatcttg gtgtttgcaa aaaaaaaaaa aaaaaaaact 1860
cgagactagc gg 1872

<210> 95
<211> 1516
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1505)
<223> n equals a,t,g, or c

<400> 95
ggagggcaga aagggagagt gctgggcggg cttagtcgga gattgaggac tgggaatccg 60
cttccgggag ggcactgtct agtgcacagg caacctggcc ttsgcctcct agcccgagaa 120
gccgaatctc cctaatccct gtgacctgtg tcacctctgc atcgcgagga gggggataag 180
tggggagaag tctggtgtca gatgggatgg cgccggaaga gggtgccaca gcggggacgg 240
aaggcgcccc caccccaact ccacgggaat ataaacaatt tgtattttcc gatcaggtgg 300
cgggacaggc ttcattggga cagccctaac ccagctgctg aatgccagag gccacgaagt 360
acgttggtct cccgaaagcc cgggcccggc cggatcacgt gggatgagct cgctgcatcg 420
gggctgccga gctgcgatgc cgccgtcaac ctggccggag agaacatcct caaccctctc 480
cgaagatgga atgaaacctt ccaaaaagag gttctcggca gccgcctaga gaccacccaa 540
ttgctggcta aagccatcac caaagcccca caacccccca aggcctgggt cttagtcaca 600
ggtgtagctt actaccagcc cagtctgact gcggagtatg atgaagacag cccaggaggg 660
gactttgact ttttctccaa cctcgtaacc aaatgggaag ctgcagccag gcttcctgga 720
gattctacac gccaggtggt ggtgcgctca ggggttgtgc tgggccgtgg gggtggtgcc 780
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caattcttcc cctggataca catcggggac ctggcaggaa tcctgaccca tgcccttgaa 900
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atcccacggc gaacactggc cactggctac cagtattcct tcccagagct aggggctgcc 1140
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ttggtttctc tacatgtcct gcagctgccc cacttctcct ttacgctgtg tagagaatgc 1440
tctgcagttt aggcaataaa aataaattgt ctcactaaaa aaaaaaaaaa aaattggggg 1500
ggggncccgt acccat 1516

<210> 96

<211> 1770
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (485)
<223> n equals a,t,g, or c

<400> 96
agtgccagga gtgggttcca gatcgggaga gctacgtgtc ccacatgaaa aagagccacg 60
gtcggacatt gaagcggtac ccatgccggc agwgtgaaca gtccttccac acccccaaca 120
gcctgcgcaa acacatccgc aacaaccatg acacagtaaa gaagttctac acctgcgggt 180
actgcacaga ggacagcccc agctttcctc ggccctccct tctggagagc cacatcagcc 240
ttatgcatgg catcagaaac cctgatttga gccagacgtc caaagtgaaa cctccgggtg 300
gacattcccc tcaggtgaac catctgaaaa gaccagtcag tggagtgggg gacgctccag 360
gcaccagcaa tggcgcaact gtctcttcca ccaaaaggca caagtccctt tttcagtgcg 420
cgaaatgtag ttttgccaca gactcggggc tcgagtttca gagccacata cctcagcacc 480
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tccctcagcc gccacctctt cattgtccac aaggtgagag accaggagga ggaggaggaa 600
gaggaggcgg cggcacggag atggcagtgg aggtggcaga gcagaggagg gctccgggga 660
rgargtgccc atggagacta gagagaatgg actggaagaa tgtgccggtg agccyttgtc 720
agctgaccca gaggcgagga gattgctggg cccggcccct gaggacgatg gtggccacaa 780
tgatcacakt caaccacagg cytytcagga ccaggacagc cacacactgt cccctcaggt 840
gtgaccggag actttgcagt gtgcatggtc aggggtggtg ccgaagtgtc ttccacctgc 900
cctgcggacc gtggaaaata aaaggctctg cccccagtgt gagtgtgacc ggttgtaccc 960
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tgtctctgtg ggtggggtgg gagaaacctc tgctgcacac ctctgtttgg aacctgggca 1500
gagcaggagg taaggcaaag gcaggcaggc accaagaacc agaccccttg agaaggcgct 1560
gtgggtgggt ctttgttctg ctgttctgcc tttcctgaca ggtggggttg gggcacacag 1620
acattggaat atttgtactg ctctcgtgcc atttgagagg cttgctgccc caggcaggcc 1680
agcccctact cctcttggct acactcatgt tkctcagact atatttcaaa taaaaaatct 1740
tctcaccatg caggtaggct cttgtattcc 1770

<210> 97
<211> 938
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (183)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (293)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (360)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (938)
<223> n equals a,t,g, or c

<400> 97
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ratggagagc agagggagag ggccaggctc caractccca cacgcccaca cagcacctct 120
gccaggccta ggagaagaca ggtgcagctc ttgcagctct gcgggtgtgc ggccaaaggc 180
aangcccacg ggctggatgt cacttccccg actgtctctt ggttggcttg tccttgtgca 240
agacccagcs tgtcacgaca garcctgggc acttcagagg aggagccagg ttngaatggt 300
aagggggggaa ttggggtcca ccatagtctt ctgctctggt cctccacggg tgggaccagn 360
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ctggcagaag acactcacca ggttatctgt gaagagactc tgggatccca tcacctcaaa 480
gccagagggt ccccaagtca ccgctgagag cacttgagcc tcaaggatgt aagcctgacc 540
ataggatctt gactccaaca gcggcaaccc ccaccccccat tgtggtccgt ccttaaccca 600
tccactcttc ttcggaggca actgagaaca cataaagcaa gcagctacct agcatccccc 660
tcctaaagct ttagactcag agcccagggt cccccacaag cctcaaggta gcctcaggtt 720
tctctaattt cctccactcc cagttcgaag caaacagctt actgcctagt ccccgccaat 780
cccaagggcg ggctggctga tggcagcatg gtgggctggc ctgggtgtgg agtgaaagag 840
tcactgtggt gggggcgaga ggaggacttg ggagctggag gtgtgacacc ttcagttctg 900
ttcctattaa aggaccttct gaagggcaaa aaaaaaan 938

<210> 98
<211> 311
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (297)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (309)
<223> n equals a,t,g, or c

<400> 98
agatgcggct ggagcagcag aagcagacgg tccagatgcg cgcgcagatg cccgccttcc 60
ccctgcccta cgcccaggca tgtgccatcc tcccgccacc cagaggtttg tgggctgagg 120
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accaactctc accgctgtct ctttcgtccc cagctccagg ccatgcccgc agccggaggt 180
gtgctctacc agccctcggg accagccagy ttccccagca ccttcagccc ygccggctcg 240
gtggagggct ccccaatgca cggcgtgtac atgagccagc cggtccctgc cgctggnccc 300
taccccagna t 311

<210> 99
<211> 620
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (570)
<223> n equals a,t,g, or c

<400> 99
actgccggtc gttcggacgt cttgcctgtc gctggaggag aggtccgggc tctccaggaa 60
ggtggctgcg gcgacaaaat gaagatattc gtgggcaacg tcgacggggc ggatacgact 120
ccggaggagc tggcagccct ctttgcgccc tacggcacgg tcatgagctg cgccgtcatg 180
aaacagttcg ccttcgtgca catgcgcgag aacgcgggcg cgctgcgcgc catcgaagcc 240
ctgcacggcc acgagctgcg gccggggcgc gcgctcgtgg tggagatgtc gcgcccaagg 300
cctcttaata cttggaagat tttcgtgggc aatgtgtcgg ctgcatgcac gagccaggaa 360
ctgcgcanct cttcgagcgc cgcggacgcg tcatcgagtg tgacgtggtg aaagactacg 420
cgtttgttca matggagaag gaagcagatg ccaaagccgc aatcgcgcag ttcaacggca 480
aagaagtgaa gggcaagcgc atcaacgtgg aatctycacc aagggtcaga agaaggggcc 540
tggcctggct gtccagtctt gggacaagan caagaaacca agggctgggg ataggccttc 600
cctggaatgg tggctttctg 620

<210> 100
<211> 2511
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (44)

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2456)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2488)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2511)
<223> n equals a,t,g, or c

<400> 100
gtaccattcc cngaccgctt ggcctgtncg attaatccgc cccnatagga attggcccgg 60
gccagattcg gccgagcaag cggaacctct gggaaaagca atctgtggat aaggtcactt 120
cccccactaa ggtttgagac agttccagaa agaacccaag ctcaagacgc aggacgagct 180
cagttgtaga gggctaattc gctctgtttt gtatttatgt tgatttacta aattgggttc 240
attatctttt atttttcaat atcccagtaa acccatgtat attatcacta tatttaataa 300
tcacagtcta gagatgttca tggtaaaagt actgcctttg cacaggagcc tgtttctaaa 360
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gtgataccaa ccacatctga agtcaacaga agatccaagt ttaaaattgc ctgcggaatg 480
tgtgcagtat ctagaaaaat gaaccgtagt ttttgttttt ttaaatacag aagtcatgtt 540
gtttctgcac tttataataa agcatggaag aaattatctt agtaggcaat tgtaacactt 600
tttgaaagta acccatttca gatttgaaat actgcaataa tggttgtctt taaaaaaaaa 660
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cacatataca aacacactaa tggtagaatg ctttttatg tgctagacta ttatatttag 900
tagtatgtca ttgtaactag ccaatatcac agcttttgaa aaattaaaaa atcacactat 960
attaatattt catatttgcc aacagaaaca tggcagatag gtatcaatat gttttcaatg 1020
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gaagttcaca ataggtcata aggtctcttc cttttctaaa attgaaagac aagaaattta 1260
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tgatacctgt agtaagttga caatgtggtg aaatttcaaa attatatgta acttctacta 1500
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gaatcttcta gctttagcaa acctaagcca aaggaaggaa agccacgaag aatgcagaag 1920
tcaaaccctc atgacaaagt aggcacaagt ctacaataag ctaaatcaga atttacaaat 1980
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acaagtgtcc caggtagcat tgactcccgt cattggagtg aaatggatca aagtttgaat 2040
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cactattaca tatttttcta gaaaatctaa agttcagaag agaatgtatc actgctgact 2160
tttattccaa tatttggatg gagtaagttt tagggtagaa ttttgttcag tttggattta 2220
atcttttgaa aagtaaattc cttgtttact ggtttgacta taattctctg ttatctttac 2280
gaggtaaaac tgcaagctga ctagcatgtt ctgtgaatct gccattccta aaattttat 2340
aaacacttga tacttttcac tgataatgga tcgctccaat aaacatatat tgtgaaaatg 2400
catccacaat aaatggaatt ccttcctgca aaaaaaaaaa aaaaaagggc ggccgntcta 2460
gaggatccag gcttacgtac gcgtgccngc gacgtccata gccccttcta n 2511

<210> 101
<211> 2981
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (293)
<223> n equals a,t,g, or c

<400> 101
cggacgcgtg ggcggccacg ttgtcttgcg cgctttgccc gcctggccct gggactctga 60
ccctcggcta ccctttcctg ccccactagc gtggccgcga gcctcggtga gccggccgta 120
ttcccgctct cgcttagggg gcacaggcgc aggcatcggc ccggccactc caagccttcg 180
gtgcgcgggc gcgtctggga tacgggcccg ggaggcgccg ccctccgtcc gcccggtgcc 240
tctcaggaac agcgaaccgg agagagcgcc ggagagttgg gctcagtgcr ganctcggcg 300
ccggggccca tgcccgtgcg cccccgcagg ccggcgccat ggcctccggg agtktggccg 360
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<210> 111
<211> 3630
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3606)
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3608)
<223> n equals a,t,g, or c

<400> 111
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cggccgctcc tcgctgcgct tcgcctccgc ctcctcggac tcggactcgg gtttatatcg 180
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<210> 112
<211> 1526
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1496)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1511)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1512)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1515)
<223> n equals a,t,g, or c

<400> 112
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ggctccgggc agctcggcct tgggggcttc ggggccccga gacgcggggc gtatgagtgg 180
ggcgtgcgct ccacgcggaa gtcggagcct cctcccctgg atagggtgta cgagatccct 240
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ggccgctcaa nnggncccaa gttagt 1526

<210> 113
<211> 585
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (422)
<223> n equals a,t,g, or c

<400> 113
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tggtgttggt attaggagat ctgcacatcc cacaccggtg caacagtttg ccagctaaat 120
tcaaaaaact cctggtgcca ggaaaaattc agcacattct ctgcacagga aacctttgca 180
ccaaagagag ttatgactat ctcaagactc tggctggtga tgttcatatt gtgagaggag 240
acttcgatga gaatctgaat tatccagaac agaaagttgt gactgttgga cagttcaaaa 300
ttggtctgat ccatggacat caagttattc catggggaga tatggccagc ttagccctgt 360
tgcagaggca atttgatgtg gacattctta tctygggaca cacacacaaa tttgaagcat 420
tngagcatga aaataaattc tacattaatc caggttctgc cactggggca tataatgcct 480
tggaaacaaa cattattyca tcattgtgtt gatggatatc caggcttcta cagtggkcac 540
ctatgtgtaa tcagctaatt ggagatgaag tgaaagtaga acgga 585

<210> 114
<211> 501
<212> DNA
<213> Homo sapiens

<400> 114
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ctgctcccat gtgcttcttc gctaaggctg atcaaaaaag ttagtaggtt gcttcagcta 180
taagaatttg atggtcttcc ttagtcatca tagtctgcag caatcatttt tgttcatcat 240
tgggatgtct gcttactcct gttgagtaaa tgtgatctat tcacccttgg ragctccttg 300
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catgtgccac tttgtgcatc t 501

<210> 115
<211> 1965
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (338)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (343)
<223> n equals a,t,g, or c

<400> 115
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tatcccctga agccgggccc cgcgtcccag mcctggccca aaggcaggag cagcagacaa 120
gagtgcagtg gtggctgccg ccgcaccagc ctcagtggca gatgacacac cacccccega 180
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tcccctgctg gtgggggtgg tccccagggg ccccctgcgc ctgggccccc ctsccacggc 1860
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ataaaacgaa tgcatgtttg tgtcacgaar maaaaaaaaa aaaaa 1965

<210> 116
<211> 1060
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (299)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1060)
<223> n equals a,t,g, or c

<400> 116
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gaggcttctc ttttgataac tgccgcagaa tgccgtcttg gaagccgatt ttgcaaagag 120
gggatacaag cttccaaagg yccggaaaac tggcacgacc atcgctgggg tggtctataa 180
ggatggcata gttcttggag cagatacaag agcaactgaa gggatggttg ttgctgacaa 240
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tgcagacaca gacatgacaa cccagctcat ttcttccaac ctggagctcc actccctctc 360
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cggaagcaac attgacctct gcgtcatcag caagaacaag ctggattttc tccgcccata 720
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaan 1060

<210> 117
<211> 709
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (174)
<223> n equals a,t,g, or c

<400> 117
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gttaaatctt gctgaattcg tggtaagctg ttaccatgtc tacattttgt agantgattt 180
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<210> 118
<211> 2053
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (813)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2049)
<223> n equals a,t,g, or c

<400> 118
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gccacattgg agatggcggt actgagcaga catgccccca cgagtagcct gactccctgg 180
tgtgctcctg gaaggaagat cttggggacc cccccaccgg agcacaccka rggatcatct 240
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taatatttcc ggcaaaatcc catgcttggg ttttgtcttt aaccttgtaa cgcttgcaat 1980
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<210> 119
<211> 1824
<212> DNA
<213> Homo sapiens

<400> 119
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aataaatgtg cactgtaatg gaaa 1824

<210> 120
<211> 606
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (144)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (155)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (598)
<223> n equals a,t,g, or c

<400> 120
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ctatttycag cttttcctca attnacattt tggtngtata cttcagagtg atgttatcta 180
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gaaacttgtt aaattttttg ttaactaaat ttttttctta aaataaagac tttttcacaa 540
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gtatac 606

<210> 121
<211> 838
<212> DNA
<213> Homo sapiens

<400> 121
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tagcccccctc ccactcccac actcactctt gcagagcctg tgtctttaag cagctggcgt 780
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<210> 122
<211> 656
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (218)
<223> n equals a,t,g, or c

<400> 122
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cacaggaggg aaagctcttc cagctctacc ccaggaactt cctgcgctag ctgggcgggg 540
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaggggggg gggcggacgc gtgggc 656

<210> 123
<211> 1386
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1283)
<223> n equals a,t,g, or c

<400> 123
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cattgg                                                            1386

<210> 124
<211> 845
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (823)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (825)
<223> n equals a,t,g, or c

<400> 124
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catcgtggtg gagtactgtg aaccctgcgg cttcgaggcg acctacctgg agctggccag 180
tgctgtgaag gagcagtatc cgggcatcga gatcgagtcg cgcctcgggg gcacaggtgc 240
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cttcgcctcg gtaatacctg tctgatgcca cagattttat ttattctccc ctaacccagg 720
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa atntnggggg ggggcccccc 840
ccccc 845

<210> 125
<211> 1656
<212> DNA
<213> Homo sapiens

<400> 125
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tgctgcagct ggaggagctc ccccgtgctg agggggctgc tgttgcagga ggccctggga 180
gcagtgccgg gcccccacct cccartgcgg aggctgctga gccagaggcc agactggcgg 240
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aagataaaaa cgcccaaaaa aaaaaaaaaa aaaacc 1656

<210> 126
<211> 837
<212> DNA
<213> Homo sapiens

<400> 126
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aaaattccag ttatttattt ccaaaatgtt tggaaacagt ataatttgac aaagaaaaat 180
gatacttctc tttttttgct gttccaccaa atacaattca aatgcttttt gttttatttt 240
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<210> 127
<211> 1217
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1168)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1169)
<223> n equals a,t,g, or c

<400> 127
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gatgtctcta tgacgttcat caccagcaaa gaggacctga actgccagga ggaggaggac 540
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tggaccaccc gctgccccta caaggatacg ctggggccca tgcagaagga gctggccgag 660
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<210> 128
<211> 1349
<212> DNA
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<213> Homo sapiens

<220>
<221> misc feature
<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1133)
<223> n equals a,t,g, or c

<400> 128
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gctgaggaca tgacatccaa agattactac tttgactcct acgcacactt tggcatccac 180
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaa 1349

<210> 129
<211> 2318
<212> DNA
<213> Homo sapiens

<400> 129
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<211> 2149
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<213> Homo sapiens

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<220>
<221> misc feature
<222> (819)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1518)
<223> n equals a,t,g, or c

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<222> (2116)
<223> n equals a,t,g, or c

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<210> 131
<211> 1020
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<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1019)
<223> n equals a,t,g, or c

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ttaagaaact caactgccaa gtgattggtg cttctgtgga ttctcacttc tgtcatctag 360
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<210> 132
<211> 2319
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2246)
<223> n equals a,t,g, or c

<400> 132
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<211> 1373
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (403)
<223> n equals a,t,g, or c

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<210> 134
<211> 1657
<212> DNA
<213> Homo sapiens

<400> 134
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<211> 2360
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2330)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2353)
<223> n equals a,t,g, or c

<400> 135
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<211> 1042
<212> DNA
<213> Homo sapiens

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cgtcaagctt ctgaaagaaa gattagagaa attcttccat cggtatttgc aaacgctaca 600
tttgcagtca tgtgacctac ttgacatttt tggtggaatc agcttcttcc cgttggataa 660
aatgacttat ttgaaaatcc agtcctttat taatagaatg gaggaaagcc tgaatatagt 720
caaatacact gcttttctct ataacgatca gctcatctgg agtggattag aacaagatga 780
catgagaatt ttatacaaat accttaccac ctcccttttty ccaaggcaca tcgaacctga 840
gttagcagga agggattctc caataagagc agaaatgcca ggaaatcttc aacactatgg 900
aagatttctt accggaccct tgaacctcaa tgatccagat gcaaaatgca gattccccaa 960
aatttttgta aatacagwtg acacttatga agagctccat ttaatcgktt ataaggyctg 1020
agaaagaacc ccagtttaag tt 1042

<210> 137
<211> 1037
<212> DNA
<213> Homo sapiens

<400> 137
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gcggagcggg gccgccgggg cctctccagg gccgcagcgg cagcagttgg gcccccgcc 120
ccggccggcg gaccgaagaa cgcaggaagg gggccggggg gacccgcccc cggccggccg 180
cagccatgaa ctccaacgtg gagaacctac ccccgcacat catccgcctg gtgtacaagg 240

aggtgacgac actgaccgca gacccacccg atggcatcaa ggtctttccc aacgaggagg 300
acctcaccga cctccaggtc accatcgagg gccctgaggg gaccccatat gctggaggtc 360
tgttccgcat gaaactcctg ctggggaagg acttccctgc ctccccaccc aagggctact 420
tcctgaccaa gatcttccac ccgaacgtgg gcgccaatgg cgagatctgc gtcaacgtgc 480
tcaagaggga ctggacggct gagctgggca tccgacacgt actgctgacc atcaagtgcc 540
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gcgggcccag cggcagggcc gaagccggtc gggccctggc cagtggcact gaagcttcct 720
ccaccgaccc tggggcccca gggggcccgg gaggggctga gggtcccatg gccaagaagc 780
atgctggcga gcgcgataag aagctggcgg ccaagaaaaa gacggacaag aagcgggcgc 840
tgcggcggct gtagtgggct ctcttcctcc ttccaccgtg accccaacct ctcctgtccc 900
ctccctccaa ctctgtctct aagttattta aattatggct ggggtcgggg agggtacagg 960
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aaaaaaaaaa aaaaaaa 1037

<210> 138
<211> 1490
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1225)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1239)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1348)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1452)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1487)
<223> n equals a,t,g, or c

<400> 138
cggcacgagg tggattcttg tccatagtgc atctgcttta agaattaacg aaagcagtgt 60
caagacagta aggattcaaa ccatttgcca aaaatgagtc taagtgcatt tactctcttc 120
ctggcattga ttggtggtac cagtggccag tactatgatt atgattttcc cctatcaatt 180
tatgggcaat catcaccaaa ctgtgcacca gaatgtaact gccctgaaag ctacccaagt 240
gccatgtact gtgatgagct gaaattgaaa agtgtaccaa tggtgcctcc tggaatcaag 300

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tatctttacc ttaggaataa ccagattgac catattgatg aaaaggcctt tgagaatgta 360
actgatctgc agtggctcat tctagatcac aaccttctag aaaactccaa gataaaaggg 420
agagttttct ctaaattgaa acaactgaag aagctgcata taaaccacaa caacctgaca 480
gagtctgtgg gcccacttcc caaatctctg gaggatctgc agcttactca taacaagatc 540
acaaagctgg gctcttttga aggattggta aacctgacct tcatccatct ccagcacaat 600
cggctgaaag aggatgctgt ttcagctgct tttaaaggtc ttaaatcact cgaatacctt 660
gacttgagct tcaatcagat agccagactg ccttctggtc tccctgtctc tcttctaact 720
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gcattgcagt atctgcgttt atctcacaac gaactggctg atagtggaat acctggaaat 840
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gacataaaga gcttctgcaa gatcctgggg ccattatcct actccaagat caagcatttg 1020
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cgtgktgcta acgaagtcac tcttaattaa tatctgtatc ctggaacaat attttatggk 1140
tatgkttttc tgtgkgtcag ttttcatagt atccatawtt tawtactgkk tattacttcc 1200
atgaatttta aaatctgagg gaaangtttg taaacattna ttttttttaaa gaaaagagaa 1260
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tttatttgta aatttagtgt tttttttantt ctacgtcaaa gatgtgcaaa acctttttacg 1380
gttgcaggaa acagccagtt ttaaaatcct taaacttaag ttcctcaagc tggataaaac 1440
ataggagtac cnctgcacaa tatctgaaca tcaatgtcgg taaaatnggg            1490
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<210> 139
<211> 1684
<212> DNA
<213> Homo sapiens

<220>
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<222> (93)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (201)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1657)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1659)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1682)
<223> n equals a,t,g, or c

<400> 139
tcgacccacg cgtccggccg gctgagccac agcagggtcg ccgcggggtc ccggggccgt 60
gctcccctgc ccctccggga gcgcgcgggg cgnggcgggg cggggcggga ccaggcgggc 120
gagctgggcc ctcgcccctc cctcgggcgg tcacctgggc acgggcgctg caggtgtcgg 180
ggcctcaacc ttgcggaccg nacagccatc gatcctcggg tggcctcgag gtggtggcag 240
ggccgccccc tgcagtccgg agacgaacgc acggaccggg cctccggagc argttcggyt 300
ggaargaamc gctctcgstt cgtcctacac ttgcgcaaat gtctccgagc ttactcacat 360
agcatattgg tatatcaaaa tgaaatgcaa ggaaccaaaa ataacataat tgaaggcagt 420
aaaagtgaaa ttaaatagga agatcatcag tcaaggaaga cccactggag aggacagaaa 480
atgaagcagt gttttatcat gtgtatttca gcaggtcttc ttgaaattta actaaaaata 540
tgactgctct ctcttcagag aactgctctt ttcagtacca gttacgtcaa acaaaccagc 600
ccctagatgt taactatctg ctattcttga tcatacttgg gaaaatatta ttaaatatcc 660
ttacactagg aatgagaaga aaaaacacct gtcaaaattt tatggaatat ttttgcattt 720
cactagcatt cgttgatctt ttacttttgg taaacatttc cattatattg tatttcaggg 780
attttgtact tttaagcatt aggttcacta aataccacat ctgcctattt actcaaatta 840
tttcctttac ttatggcttt ttgcattatc cagttttcct gacagcttgt atagattatt 900
gcctgaattt ctctaaaaca accaagcttt catttaagtg tcaaaaatta ttttatttct 960
ttacagtaat tttaatttgg atttcagtcc ttgcttatgt tttgggagac ccagccatct 1020
accaaagcct gaaggcacag aatgcttatt ctcgtcactg tcctttctat gtcagcattc 1080
agagttactg gctgtcattt ttcatggtga tgattttatt tgtagctttc ataacctgtt 1140
gggaagaagt tactactttg gtacaggcta tcaggataac ttcctatatg aatgaaacta 1200
tcttatattt tcctttttca tcccactcca gttatactgt gagatctaaa aaaatattct 1260
tatccaagct cattgtctgt tttctcagta cctggttacc atttgtacta cttcaggtaa 1320
tcattgtttt acttaaagtt cagattccag catatattga gatgaatatt ccctggttat 1380
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taaaagacat tggattacct ttggatccat ttgtcaactg gaagtgctgc ttcattccac 1500
ttacaattcc taatcttgag caaattgaaa agcctatatc aataatgatt tgktaatatt 1560
attaattaaa agttacagct gtcataagat cataatttta tgaacagaaa gaactcagga 1620
catattaaaa aataaactgr actaaaacaa aaaaaancna aaaaaaaaaa aaaagggcgg 1680
cnac 1684

<210> 140
<211> 427
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (395)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<400> 140
ggacttcctc ccagcacatt cctgcactct gccgtgtcca cactgcccca cagacccagt 60
cctccaagcc tgctgccagc tccctgcaag cccctcaggt tgggccttgc cacggtgcca 120
gcaggcagcc ctgggctggg ggtaggggac tccctacagg cacgcagccc tgagacctca 180
gagggccacc ccttgagggt ggccaggccc ccagtggcca acctgagtgc tgcctctgcc 240

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accagccctg ctggcccctg gttccgctgg ccccccagat gcctggctga gacacgccat 300
ggcccttcag ctggcccaca cytyttcccg gsccctggaa kttggcaytg cagcagacag 360
ytccytgggc accagrcagy taacaggaca cagcngccag cccaaacagc agcgggnatg 420
ggggcag                                                           427

<210> 141
<211> 889
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (60)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (698)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (889)
<223> n equals a,t,g, or c

<400> 141
ggcacgaggt tgacgtcctg tagcatttgc tgttctagaa agtacagaga cacgtagaan 60
agatgggagg atctagaagg aggctgtctc ctgtgtagtg tatatttatc tgtaagtgag 120
ccgttgggga aggattgaat acagagacgc tgtctgcttg ctgccttaag acagctagct 180
gaattgctga ttaactttta aaatacccag cttggtttat ttttcttaga atctgttgct 240
aagactgggg acgctgtttt cttttacaaa gggaaatcta agttaatttc aaggcattcg 300
aaatggggaa agactattat tgcattttgg gaattgagaa aggagcttca gatgaagata 360
ttaaaaaggc ttaccgaaaa caagccctca aatttcatcc ggacaagaac aaatctcctc 420
aggcagagga aaaatttaaa gaggtcgcag aagcttatga agtattgagt gatcctaaaa 480
agagagaaat atatgrtcag tttggggagg aagggttgaa aggaggagca ggaggtactg 540
atggacaagg aggtaccttc cggtacacct ttcatggcga tcctcatgct acatttgctg 600
catttttcgg agggtccaac ccctttgaaa ttttctttgg aagacgaatg ggtggtggta 660
gagattctga agaaatggaa atagrtggtg atcctttnag tgcctttggt ttcagcatga 720
atggatatcc aagagacagg aattctgtgg ggccatcccg cctcaaacaa gatcctccag 780
ttattcatga acttagagta tcacttgaag agatatatag tggttgtacc aaacgggatg 840
aaagatttct cgaaaaaggt taaaacgctg atggtaggag ttacagttn             889

<210> 142
<211> 1505
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1493)
<223> n equals a,t,g, or c
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<220>
<221> misc feature
<222> (1499)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1500)
<223> n equals a,t,g, or c

<400> 142
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agcttttggc tccgttccgc tggctccttc gtcagtactg acacctcggg cttgtagagc 120
acttcacgca gcaaaagcgc cccccgtcta tatcatatcg cctctcggtc ctcctaaaag 180
tcgtatgaga tggagctgga ggaggggaag gcaggcagcg gactccgcca atattatctg 240
tccaagattg aagaactcca gctgattgtg aatgataaga gccaaaacct ccggaggctg 300
caggcacaga ggaacgaact aaatgctaaa gttcgcctat tgcgggagga gctacagctg 360
ctgcaggagc agggctccta tgtgggggaa gtagtccggg ccatggataa gaagaaagtg 420
ttggtcaagg tacatcctga aggtaaattt gttgtagacg tggacaaaaa cattgacatc 480
aatgatgtga cacccaattg ccgggtggct ctaaggaatg acagctacac tctgcacaag 540
atcctgccca acaaggtaga cccattagtg tcactgatga tggtggagaa agtaccagat 600
tcaacttatg agatgattgg tggactggac aaacagatca aggagatcaa agaagtgatc 660
gagctgcctg ttaagcatcc tgagctcttc gaagcactgg gcattgctca gcccaaggga 720
gtgctgctgt atggacctcc aggcactggg aagacactgt tggcccgggc tgtggctcat 780
catacggact gtacctttat tcgtgtctct ggctctgaat tggtacagaa attcataggg 840
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atcttcatgg acgaaatcga ctccatcggc tcctcgcggc tggagggggg ttctggaggg 960
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accaagaaca tcaaggttat catggctact aataggattg atatcctgga ctcggcactg 1080
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ctggacattt tgaagattca ttctcggaag atgaacctga cccgggggat caacctgaga 1200
aaaattgctg agctcatgcc aggagcatca ggggctgaag tgaagggcgt gtgcacagaa 1260
gctggcatgt atgccctgcg agaacggcga gtccatgtca ctcaggagga ctttgagatg 1320
gcagtagcca aggtcatgca gaaggacagt gagaaaaaca tgtccatcaa gaaattatgg 1380
aagtgagtgg acagcctttg tgtgtatctc tccaataaag ctctgtgggc caagtcaaaa 1440
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aanggggggnn 1500
ccccc                                                              1505

<210> 143
<211> 1235
<212> DNA
<213> Homo sapiens

<400> 143
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cgggcaaagg tcccaggaag gtggcgtcag catctgcagc cgcgtcgacg ttgtcggagc 120
ctccgcggag gacccaggag agccggacta ggaccagggc cctgggcctc cccacactcc 180
ccatggagaa gctggcggcc tctacagagc cccaagggcc tcggccggtc ctgggccgtg 240
agagtgtcca ggtgcccgat gaccaagact ttcgcagctt ccggtcagag tgtgaggctg 300
aggtgggctg gaacctgacc tatagcaggg ctggggtgtc tgtctgggtg caggctgtgg 360
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agatggatcg gacgctgcac aagatcaagt gccggatgga gtgctgtgat gtgccagccg 420
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ttgagacttt tgacatcgcc cgcttgacag tcaacgctga cgtgggctat tactcctgga 540
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gcgctgatta catcattatg aactactcag tcaaacatcc caaataccca cctcggaaag 660
acttggtccg agctgtgtcc atccagacgg gctacctcat ccagagcaca gggcccaaga 720
gctgcgtcat cacctacctg gcccaggtgg accccaaagg ctccttaccc aagtgggtgg 780
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gagacaggac cgggcgagcc ctggggcggc ggccgctcct gcactttctc ccctccccca 1140
cccggcacct ggtggcaccg ggccaggccc aggcgggtgc tgcagcctgg ctggacagag 1200
ccccaataaa cgatcccaca gcctcaaaaa aaaaa                            1235

<210> 144
<211> 1420
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1385)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1396)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1400)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1410)
<223> n equals a,t,g, or c

<400> 144
gcaagaacgg agctgactga ggaaccaact ggagggtctt cactctctcc ttccccagtg 60
tacaaaacca gttttctgca acattcagga gccaaatgag gaaaaagaat caagaatctg 120
actcacagcc catctgatct gttcaaagct gtcttttcca cctgctgaaa ttcattaaat 180
cactggaggc atgcataatg aatggagaat gagtgaactt ccaatgcaac ttggattcac 240
aaacccatta tcatagccaa tatgcagatt ttaaacagca tttcacattt catttgacca 300
tgtcttcttt ttcgcatcgc ctgctgcaga attccctact agaatgtgaa acaacgaaca 360
aaccacagaa cttagagtgt gctggttagt cacataactt agtagcagga ttgtgtatcc 420
aggcacaaag gtgtctttgc taatgttctc ttgctacctg ccctgcttca aacgctaaat 480
ggtatgggtc tttctttgtt gccagccata ttctacaaat aagacttttc aatatagtta 540
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tgagtaatat aattttatgt acatataatg ttagaatatt gtacagaatc ttggtttcta 600
cgatgcgctt ttcttgtttc aaaaagagga aaatgcttga tttttgttga tgatactttt 660
gttactgtcc ttaattttcc atagtttggt ttcttaattg tgctcactaa gcatcgatct 720
gtgctgatgc caagctatgg actatgtacg caagaccgag caatagacag aggtgcctag 780
ggtccaaaca cactgaacgc acgtggaccg cctggwtcag gagcctcatc agacccttct 840
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cccangggga tattcntagn attaagggcn cgggataagt 1420

<210> 145
<211> 1919
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1882)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1898)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1919)
<223> n equals a,t,g, or c

<400> 145
gcccacgcgt ccggccgctc gtccgcccgg cttgaggccc gcggggagcg cggcgcaatt 60
cgtcggcccg cggggggcg gcctcccggc atcttcgcgg cgaccaagga ctaccaggaa 120
ggggagcggc tgggatggcg cgtccgggcc ccgskagtac aaagcgggcg acctggtctt 180
cgccaagatg aagggctacc cgcactggcc ggcccggatt gatgaactcc cagaggcgct 240
gtgaagcctt cagcaaacaa gtatcctatc ttcttttttg gcacccatga aactgcattt 300
ctaggtccca aagacctttt tccatataag gagtacaaag acaagtttgg aaagtcaaac 360
aaacggaaag gatttaacga aggattgtgg gaaatagaaa ataacccagg agtaaagttt 420
actggctacc aggcaattca gcaacagagc tcttcagaaa ctgagggaga aggtggaaat 480
actgcagatg caagcagtga ggaagaaggt gatagagtag aagaagatgg aaaaggcaaa 540
agaaagaatg aaaaagcagg ctcaaaacgg aaaaagtcat atacttcaaa gaaatcctct 600
aaacagtccc ggaaatctcc aggagatgaa gatgacaaag actgcaaaga agaggaaaac 660
aaaagcagct ctgagggtgg agatgcgggc aacgacacaa gaaacacaac ttcagacttg 720
cagaaaacca gtgaagggac ctaactacca taatgaatgc tgcatattaa gagaaaccac 780
aagaaggtta tatgtttggt tgtctaatat tcttggattt gatatgaacc aacacatagt 840

ccttgttgtc attgacagaa ccccagtttg tatgtacatt attcatattc ctctctgttg 900
tgtttcgggg ggaaaagaca ttttagcctt ttttaaaagt tactgattta atttcatgtt 960
atttggttgc atgaagttgc ccttaaccac taaggattat caagattttt gcgcagactt 1020
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caccatcatc aaacactcag ttaaatataa attaacattt tttagatgac cactcaacat 1140
aatgcttaag aatggaattt cctctctgtg acagaaccca ggaattaatt cctaaataca 1200
taacgttggt atattgaaga cgaaattaaa attgtccttc agttttgagg ccatgtgtaa 1260
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tgtattgttt ttacagaata aatttattgg aatgtgwact ggggagtaag atttgaggtt 1860
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<210> 146
<211> 1379
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (925)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1371)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1377)
<223> n equals a,t,g, or c

<400> 146
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cgattctggc agaataaaca ggtgttttta gttttcccac tgtctgagcc aagcaggacc 180
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<210> 147
<211> 514
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (406)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (412)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (418)
<223> n equals a,t,g, or c

<400> 147
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tgttctgtaa gccacacagt atgcctgcag aagctgctta tcggagccaa atataattgt 180
cagtacaatt taaagaccac tatgtgtccc cggagaccaa cctgtttatt tccctgaaag 240
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gacgcgtggg cggacgcgtg ggcggacgcg tggg 514

<210> 148
<211> 2058

<212> DNA
<213> Homo sapiens

<400> 148
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tctgcgttca gggacctcgt cctttgctgg ctgtggagcg gactgggcag cggcccctgt 180
gggccccgtc cctggaactg cccaagccag tcatgcagcc cttgcctgct ggggccttcc 240
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cagaggagga tctgctgtgc atagccaaga ccttctccta ccttcgggaa tctggctggt 360
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cacgtctgat aagacttcat gaaataataa ttatagcaaa gaacagtttg gtggtctttt 1920
ctcttccact gatttttctg taatgacatt atacctttat tacctcttta ttttattacc 1980
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aaaaaaaaaa aaaaaaag 2058

<210> 149
<211> 1781
<212> DNA
<213> Homo sapiens

<400> 149
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taactcccag gggttgact ggtggggtaa ctgagcctgc tttgcagtag gtcaccctgc 180
caaacaagct aatatggaaa ccacatgtaa cttagccaga ctataccttg tgtagcttca 240
agaactcgca gtacattacc agctgtgatt ctccactgaa atttttttt taaggagct 300

caaggtcaca agaagaaatg aaaggaacaa tcagcagccc tgttcagaag gtggtttgaa 360
gacttcattg ctgtagtttg gattaactcc cctcccgcct acccccatcc caaactgcat 420
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aacaggaatc atcgattcat ccataaataa tataaggaaa aacttatgcg gtagcctgca 660
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tggaattagt ttctaatgtg gcaaactgta ttaagttaaa gttctgattt gctcactcta 780
tcctggatag gtatttagaa cctgatagtc tttaagccat tccagtcatg atgaggtgat 840
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aattcctctt tcaacgttta ggcagatcat taattatgag ctagccaaat gtgggcatac 960
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agcgggggc ctaatcacta tgccggattg aggcgcagag g 1781

<210> 150
<211> 1709
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1612)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1660)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1678)
<223> n equals a,t,g, or c

<400> 150
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tgcgtcaggg acctgcccga ctcagtggcc gccatggcat cagatgaagg caaacttttt 120
gttggagggc tgagttttga caccaatgag cagtcgctgg agcaggtctt ctcaaagtac 180
ggacagatct ctgaagtggt ggttgtgaaa gacagggaga cccagagatc tcggggattt 240

gggtttgtca cctttgagaa cattgacgac gctaaggatg ccatgatggc catgaatggg 300
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<210> 151
<211> 922
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (906)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (915)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (922)
<223> n equals a,t,g, or c

<400> 151
gcggaatcta caccttcccg gccagcggta caactgcaga actgcaggag actatctttc 60
tagacaaggc agttgaggag gagggagcgc ttgaggggga ctggcctggc gtgcactccg 120
cacctcgggg acattattgc gcgtggaacg gctgcttttg gaagactatt gcccagaaga 180
aaagatgttt ggttttcaca agccaaagat gtaccgaagt atagagggct gctgtatttg 240

cagagctaag tcctccagtt ctcgattcac tgacagtaaa cgctatgaaa aggacttcca 300
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ccagtcagat gacggctcag atacagagat ggcttctggt tctaacagaa caccagtttt 660
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aggccgtttt ggggaagtcc tcattgacac acatctcttc aagccttgct gcagcaataa 780
gaaagcagct gctgagaagc cagaggagca gggccagagc ctctgcccat ctccactcag 840
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aaaccncaaa ggtanaaaat gn 922

<210> 152
<211> 635
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (13)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (594)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (614)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (616)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (628)
<223> n equals a,t,g, or c

<400> 152
cggacgcgtg ggngtgacac gcagcccacg gtctgtactg acgcgccctc gcttcttcct 60
ctttctcgac tccatcttcg cggtagctgg gaccgccgtt cagtcgccaa tatgcagctc 120
tttgtccgcg cccaggagct acacaccttc gaggtgaccg gccaggaaac ggtcgcccag 180
atcaaggctc atgtagcctc actggagggc attgccccgg aagatcaagt cgtgctcctg 240
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ggtcgggcta agcggcggat gcagtacaac cggcgctttg tcaacgttgt gcccaccttt 480
ggcaagaaga agggccccaa tgccaactct taagtctttt gtaattctgg ctttctctaa 540
taaaaaagcc acttagttca aaaaaaaaa aaaaaamtcg gggggggccc gkancccaat 600
ttsccctata gggngncgtt taaattcntt ggcgg 635

<210> 153
<211> 2328
<212> DNA
<213> Homo sapiens

<400> 153
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gagaaccgcg ccgccgcctc ggccccgcgg aagccccgcc gcgccatgtc ttcgcctccc 180
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<210> 154
<211> 1268
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (80)
<223> n equals a,t,g, or c

<400> 154
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ccagcgtgcc tcacactggn cagggtcagc aaaggtctgg ctgcagtcag gtcctctgtt 120
cctcgcgctg gcggggtcag cagacgtctg gccgcagtga ggtccactgt tctctgcagg 180
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<212> DNA
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<211> 1686
<212> DNA
<213> Homo sapiens

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<213> Homo sapiens

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (128)
<223> n equals a,t,g, or c

<220>
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<222> (301)
<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

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ncaatattat taaaatactc atttggaata gaattccata tgggttaacc agagtactgt 360
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<212> DNA
<213> Homo sapiens

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<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (119)
<223> n equals a,t,g, or c

<220>
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<222> (1755)
<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<222> (1841)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1915)
<223> n equals a,t,g, or c

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cccctttttct cttgtttcaa ttgggtcttt accttgaact ctcctctctg gctttgcggt 660
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<210> 162
<211> 2619
<212> DNA
<213> Homo sapiens

<220>
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<222> (2546)
<223> n equals a,t,g, or c

<400> 162
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<210> 163
<211> 1419
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (624)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (697)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1187)
<223> n equals a,t,g, or c

<400> 163
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<210> 164
<211> 3810
<212> DNA
<213> Homo sapiens

<220>
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<222> (189)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2523)
<223> n equals a,t,g, or c

<400> 164
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<210> 165
<211> 817
<212> DNA
<213> Homo sapiens

<400> 165
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ccactggaga gaacaggctg gcctctgcac tctggattgg tgacaggagt tatccaggcc 120
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tgtctgaagg caatagcagg cctcccatcc ctggaccgcc ttatgtggcc tcccctgacc 180
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cctgggaggg ctcctcagag gcaggcctgg actgggctgg ggccagcttc tccccaggga 300
ctccratgtg ggcggccttg gatgagcaga tgctgcagga gggcatccag gcmtcgcttc 360
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cctagcccag gcagagagtg gggcacaggc aggcccttgg gtgctaaggg ctgggctgca 660
tgtgggtagc ccgagctcct actctgtcta aagagggcca cagtggggag caggggcacc 720
tctggaggca ggagaggccc cccagcatgc tgccctagta cgtgtttaga ataaaaacca 780
gtttgttttt caacctggac ctccttggaa aaaaaaa                          817

<210> 166
<211> 1578
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<400> 166
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tgggagggaa accatgtctt gctaaacctg tttctggtgc ctcccatccc cagacccacc 180
agacaccaca cagcagacaa tacacaccca ctcgcacaag cttccatcca catgtgttgt 240
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cataccagat aatagctgca ttactgccaa ctgaccttat aaccctctgc accttcaaaa 1500
agattcatgg tttttaattg ctgcttttaa taacatttgt taaagttaaa aaaaaaaaaa 1560
aaatcttcgg gggggggg 1578

<210> 167
<211> 1694
<212> DNA
<213> Homo sapiens

<400> 167
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tcgcaccggc ttccgggtga ctgcttccta ctgctcgtgc tgctgctcta cgcgccagtc 180
gggttctgcc tcctcgtcct gcgcctcttt ctcgggatcc acgtcttcct ggtcagctgc 240
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aaccatgtga cacctttcga ccacaacata gtcaatttgc ttaccacctg tagcaccgtg 420
agtgagagcg aggccgarag cgccacgggg cggttccctg gggcccagct gaaggccccc 480
ctgtccccac tcgcgttccs catggaggat actgagcctt acccctaacc ccgatcctct 540
acccaacatg tcagtttttt ttttcatttt cctcaatatt tttyttcttg ctttctcttc 600
tcctggttcc cagcctctac tcaatagtcc ccccagcttt gtgtgctggt ctcggggctt 660
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gaggcttccc ccccactcctc tgctgctatt ccctgaggaa gaggccacca atggccggga 780
ggggctcctg cgcttcagtt cctggccatt ttctatccaa gatgtggtac aacctcttac 840
cctgcaagtt cagagacccc tggtctctgt gacggtgtca gatgcctcct gggtctcaga 900
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tgactgagct caaaggaaca ggatggcacc cagagccgca ggacggagac tgggggcagc 1560
cctcacccaa ctcacaacag gctggatggg tgggtggtaa aaagggaagg atgaggctcc 1620
cccaatgtca cattaaattc atggttttca ttcaacaaaa aaaaaaaaaa aaaaaaaaaa 1680
aaaaaaaact cgag 1694

<210> 168
<211> 1636
<212> DNA
<213> Homo sapiens

<400> 168
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gtgctgttgc acgtgctgtt tgagcacgcg gtcggctacg cgctgctggc gctgaaggaa 120
gtggaggaga tcagtctgct gcagccgcag gtggaggagt ccgtgctcaa cctgggcaaa 180

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gaaaatgcca acgccgtgtc tgaaggggtt gttcatgagg acctccgcct gctcttggag 300
acccacctgc cgtccaaaaa gaagaaagta ctcttgggag ttggggatcc caagattggt 360
gccgcaatac aggaggagtt agggtacaac tgccagactg gaggagtcat agctgagatc 420
ctgcgaggag ttcgtctgca cttccacaat ctggtgaagg gtctgaccga tctgtcagct 480
tgtaaagcac agctggggct gggacacagc tattcccgtg ccaaagttaa gtttaatgtg 540
aaccgggtgg acaatatgat catccagtcc attagcctcc tggaccagct ggataaggac 600
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aagatcatca acgacaatgc cacatactgc cgtcttgccc agtttattgg aaaccgaagg 720
aactgaatga ggacaagctg gagaagctgg aggagctgac aatggatggg gccaaggcta 780
aggctattct ggatgcctca cggtcctcca tgggcatgga catatctgcc attgacttga 840
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cagaaaacag cagtagtact ccagaggagt gtgaggagay gagtgaaaaa cccaaaaaga 1500
agaaaaagca aaagccccag gaggttcctc aggrgratgg aatggaagac ccatctatct 1560
ctttctccaa acccaagaaa aagaaatctt tttccaagga ggagttgatg agtagcgatc 1620
ttgaagagac cgctgg                                                 1636

<210> 169
<211> 667
<212> DNA
<213> Homo sapiens

<400> 169
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ctcggcgccc tggcgctgct cctgctgtcc agcctctccc gctgctcagc cgaggcctgc 120
ctggagcccc agatcacccc ttcctactac accacttctg acgctgtcat ttccactgag 180
accgtcttca ttgtggagat ctccctgaca tgcaagaaca gggtccagaa catggctctc 240
tatgctgacg tcggtggaaa acaattccct gtcactcgag gccaggatgt ggggcgttat 300
caggtgtcct ggagcctgga ccacaagagc gcccacgcag gcacctatga ggttagattc 360
ttcgacgagg agtcctacag cctcctcagg aaggctcaga ggaataacga ggacatttcc 420
atcatcccgc ctctgtttac agtcagcgtg gaccatcggg gcacttggaa cgggccctgg 480
gtgtccactg aggtgctggc tgcggcgatc ggccttgtga tctactactt ggccttcagt 540
gcgaagagcc acatccaggc ctgagggcgg caccccagcc ctgcccttgc ttccttcaat 600
aaacatcaca ggacctggga ctgcacagga aaaaaaaaaa aaaactcgrg gggggcccgg 660
tacccaa                                                           667

<210> 170
<211> 3598
<212> DNA
<213> Homo sapiens

<220>
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<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (22)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (964)
<223> n equals a,t,g, or c

<400> 170
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ggcctccacc gcggccggga agcagcggat tcccaaagtg gccaaggtga aaaacaaagc 180
cccggctgag gtacagataa ctgctgaaca actcttaaga gaggctaaag aaagagaact 240
tgagcttctt ccacctccac ctcaacagaa gatcacagat gaagaagaat taaatgatta 300
taaactaagg aaaaggaaga cttttgaaga taatataaga aaaaacagga ctgtgattag 360
taactggata aaatacgcac aatgggaaga aagcctaaag gagattcaaa gggctcgatc 420
catatacgag cgtgctttag atgtagacta ccgaaatatt acactctggc tgaaatacgc 480
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aacaacgctg cctcgagtta atcagttctg gtacaagtac acgtacatgg aggaaatgtt 600
gggaaacgtt gccggtgccc ggcaggtgtt tgagcgctgg atggagtggc agcctgagga 660
gcaagcctgg cactcctaca tcaactttga gctgagatac aaagaggtgg atcgggcccg 720
caccatttat gagcgakttg tcctcgtgca ccctgatgtt aagaactgga tcaagtatgc 780
ccgctttgaa gaaaaacatg cttattttgc ccatgcacgg aaagtgtatg agagagctgt 840
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cgatctgaga gttttccttt aacctggact gtgtttctca agcacatttt ttctttgttc 3420
actgcccaag gactagaact gtatttttaa ggttgttttc ccctaaaagg acctttagta 3480
agcaaattta ttattaaatg tgcacatctt attcacccaa gggaataaaa gctacttcgt 3540
aatgttgtta ctaaatttta tcttgaaaat aaataacagt gtttgaggac araaaaaa   3598
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<210> 171
<211> 940
<212> DNA
<213> Homo sapiens

<220>
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (919)
<223> n equals a,t,g, or c

<220>

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<221> misc feature
<222> (935)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (938)
<223> n equals a,t,g, or c

<400> 171
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ctcaagtcgc agacactatg ctgcctccca tggccctgcc cagtgtatct tggatgctgc 120
tttcctgcct catgctgctg tctcaggttc aaggtgaaga accccagagg gaactgccct 180
ctgcacggat ccgctgtccc aaaggctcca aggcctatgg ctcccactgc tatgccttgt 240
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acctggtgtc tgtgctcagt ggggctgagg gatccttcgt gtcctccctg gtgaagagca 360
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gaaatccctc caccatctca agccccggcc actgtgcgag cctgtcgaga agcacagcat 540
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actagtgcag gagggaagtc agcagcctgt gtttggtgtg caactcatca tgggcatgag 660
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catacggcct aaggctttaa agagcaataa aatttttagt ctgcaaaaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 900
aaaaaaaaaa aaaaaaaana aaaaaaaaaa aaaanaanaa                       940

<210> 172
<211> 1458
<212> DNA
<213> Homo sapiens

<400> 172
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tttccacggt tgctcactcg gattcttcaa aaacttcacc tgaaggctga gagcagtttc 180
agtgaagaag aggaagaaaa acttcaagcg gcattttctc tagagaaaca agatcttcac 240
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gcagctttgc agcagcaatt agagaacatt catcttagac aagacaaagc tgaagcattt 360
gtcaatackt ggtcttctat gggtcaagaa acagttgaaa agttccggca gagaattctg 420
gctccctgta agctagagac ygttggatgg cagcttaacc ttcagatggc tcactctgct 480
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aagagcctgg agaaagttct tgtggaattc agtcacaagg agttgtttga tttctataac 600
aagctagaga ctatacaagc acagctggat tcccttacat gatgttttcg aagactgttt 660
ttttcatcac gctcctgcca cctcattatt ttgcattgaa gatacattgc caggttgtgt 720
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aataacaacc aatagagatc attgttaaga atactgaggt tctaatatac tttctttagt 840
tctgtgagcc aacagtaatt attaagaaca ctttcccttt aaaggaaaca aaagtgaata 900
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ctgtcaactt cagtttctct ctcagtttaa tgatttaata atagtccagg tttttgtgtg 1260
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aaaaaaaaaa aaagtcga 1458

<210> 173
<211> 2709
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2595)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2622)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2659)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2670)
<223> n equals a,t,g, or c

<400> 173
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<210> 174
<211> 1013
<212> DNA
<213> Homo sapiens

<400> 174
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<210> 175
<211> 1697
<212> DNA
<213> Homo sapiens

<400> 175
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tcatggacca tccaggtggg tctagtttcc ctgttggaca atccagcccc atcccacttg 240
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catttggtgc ttgacgtatt attgtccttt gattccaaat aatatgtttc cttccctcat 1620
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aaaaaaaaaa aaaaaaa 1697

<210> 176
<211> 1409
<212> DNA
<213> Homo sapiens

<400> 176
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cccgggctgc aggaattccg ctgctggcct ggggttgtgg ttgaggccgg gtctccgctc 180
ctgtgcccgg gaagatggtg ctaggtggtt gcccggttag ttacttactt ctgtgcggcc 240
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<210> 177
<211> 1503
<212> DNA
<213> Homo sapiens

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aagttacaga gtgtttccta gatagaagat tagttcattt ggttcatttt gtctttgaag 660
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<210> 178
<211> 1378
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (82)
<223> n equals a,t,g, or c

<400> 178
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tgtattagct attataggta atctagagat gatttaaagt gtatggtagg atgtgcacag 660
gttatatgca aatactacac cattttctat aagggacttg aacatcatgg actttagtat 720
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cattttctaa ttagaagtca catgataaat ataatcagta tagtaataat accataatgt 1320
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<210> 179
<211> 2251
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2020)
<223> n equals a,t,g, or c
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<220>
<221> misc feature
<222> (2050)
<223> n equals a,t,g, or c

<400> 179
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ccgggaaagt cttaatagac atcgatactt gaattcttta tttcccagtg aaaactccac 240
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<210> 180
<211> 1000
<212> DNA
<213> Homo sapiens

<220>

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<221> misc feature
<222> (20)
<223> n equals a,t,g, or c

<400> 180
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gggatctcac cgtgggtccg attagccttt tctctgcctt gcttgcttga gcttcagcgg 180
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caggactcta aatactctaa cagctgtcca gtgttggtga ttccagtgga ctgtatctct 660
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aaaaaaaaaa aaaaaaaaam maaaaaaggg gggggccccc                       1000

<210> 181
<211> 1429
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (761)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1407)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1420)
<223> n equals a,t,g, or c

<400> 181
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gccccgcacg ggctgtctgg gtgtccgcca tccagggtct ggcagagcct ctgagatgat 120
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<210> 182
<211> 2725
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2713)
<223> n equals a,t,g, or c

<400> 182
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aggaagacac tcccaattct gtttgggagc ctgcgaaggt gcttgtgttt gtcagacaaa 120
tacagccagg cctgccaccc cttaggctcc aaagtccgga ggtgcagaaa gccaggacca 180
agagacaggc agctcaccag ggtggacaaa tcgccagaga tgtggtgcat tgtcctgttt 240
tcacttttgg catgggttta tgctgagcct accatgtatg gggagatcct gtcccctaac 300
tatcctcagg catatcccag tgaggtagag aaatcttggg acatagaagt tcctgaaggg 360
tatgggattc acctctactt cacccatctg gacattgagc tgtcagagaa ctgtgcgtat 420
gactcagtgc agataatctc aggagacact gaagaaggga ggctctgtgg acagaggagc 480
agtaacaatc cccactctcc aattgtggaa gagttccaag tcccatacaa caaactccag 540
gtgatcttta agtcagactt ttccaatgaa gagcgtttta cggggtttgc tgcatactat 600
gttgccacag acataaatga atgcacagat tttgtagatg tcccttgtag ccacttctgc 660
aacaatttca ttggtggtta cttctgctcc tgccccccgg aatatttcct ccatgatgac 720
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gactaatcca gatacatccc accagcctct ccaagggtgg tgaccaatgc attaccttct 2340
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aaatagaact tgattgttga gacgccttgc tagaggtaga gtttgatcat agaattgtgc 2460
tggtcataca tttgtggtct gactccttgg ggtcctttcc ccggagtacc tattgtagat 2520
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aaaaaaaaaa aanaaaaaaa aaaag                                       2725

<210> 183
<211> 1751
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (344)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1617)
<223> n equals a,t,g, or c

<400> 183
gggggcggca ggttgcggcg gcgccggagc gggtctccag gctggcgagc gcccaggaca 60
ggcatgttgt tgggactggc ggccatggag ctgaaggtgt gggtggatgg catccagcgt 120
gtggtctgtg gggtctcaga gcagaccacc tgccaggaag tggtcatcgc actagcccaa 180
gcaataggcc agactggccg ctttgtgctt gtgcagcggc ttcgggagaa ggagcggcag 240
ttgctgccac aagagtgtcc agtgggcgcc caggccacct gcggacagtt tgccagcgat 300
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gtccagtttg tcctgaggcg cacagggccc agcctagctg ggangccctc ctcagacagc 360
tgtccacccc cggaacgctg cctaattcgt gccagcctcc ctgtaaagcc acgggntgcg 420
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agaaggagag ttggcggtca cagagggctc ctctgccagg cagtgggaag ccctgggttt 1440
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cgggagaggt ccttcactgt gtgtacacag caagagcatg tgtgtgccac ttcccctacc 1680
ccaacgtgaa aacctcaata aactgcccga akyakaaaaa aaaaaaaaaa aaaaaaaaaa 1740
aaaaaaaaaa a 1751

<210> 184
<211> 2200
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2096)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2140)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2157)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2181)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2184)
<223> n equals a,t,g, or c

<400> 184
ggcacgagca gcgacatact gaagggcaac ttctcaatcc gtacagccaa gatgcagcag 60
catgtgtgtg aaaccatcat ccgcatcttt aaaagacatg gagctgttca gttgtgtact 120
ccactactgc ttccccgaaa cagacaaata tatgagcaca acgaagctgc cctattcatg 180
gaccacagcg ggatgctggt gatgcttcct tttgacctgc ggatcccttt tgcaagatat 240
gtggcaagaa ataatatatt gaatttaaaa cgatactgca tagaacgtgt gttcaggccg 300
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aatctgtctt tgtcttctaa tagtctgtgt cgactctaca agtttattga acagaaggga 660
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cagttggtga agtatggctt aaaagaccta gaggaggttg ttggactgtt gaagaaactc 780
ggcatcaagt tacaggtctt gatcaatttg ggcttggttt acaaggtgca gcagcacaat 840
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gcttgaaacc aggagtttga gaccagcctg agcaacaaag caagacccca tctctataaa 2040
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<210> 185
<211> 1987
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (523)
<223> n equals a,t,g, or c

<400> 185
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aaaaagaaga gagcctaact gaaaggaaga gggagcagag caagaaaaaa aggaagacga 300
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gaaccgatct tcctgaccca attgctacat ttcagcaact tgnaccagga atataaaatc 540
aattctcgac tacttcagaa cattctagat gcaggtttcc aaatgcctac gccaatccaa 600
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aacacagtcc acagtttcag agcaggaaaa atctgggttc tgatttgtac agccttgcta 1440
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aagaaaaaga tgattaagaa accattggaa agggagagca ttagtacaac tccaaaatgt 1740
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gtagctcttg aagacaaaag ttaaaaacag actttaaaaa tactgtccca gaaatgtaat 1860
tttatgatcc cagcatgaat gttattttca tggaatactt gaagtcttac agtcacctgt 1920
accaaacatt tgaaatcaac tacaagtaca tgggactggt gataaatgat cctaaactat 1980
caagtca 1987

<210> 186
<211> 1737
<212> DNA
<213> Homo sapiens

<400> 186
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ggatgatatg tgggcaaaat cacttatgaa agtagaagca agaatcagtt ggtttgctac 180
cacataaagc catgctgttt ttggtcaaac tgtgtaaact ggaaaaattc acatcatttc 240
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gctttcttat ttttcttttg ttccattctt ttcttacttt tttccctttt cctttttttgg 420
ggaggctggc tagtagtgtg tgagaaaaga atagaagtga aatttgcata atgaatgtaa 480
aagggaaata aaagtctttt gaaggtagct atactagcac ttttgatcat cttcagggcc 540
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cctcctgtga ctgcaacgtc ttactgattg ggacagttgc caggaggata ccaacttgat 720
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tcaagtttgt cttccgcact aagatgtgag gaaattgtga tttgttctct ccaccacaaa 1560
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tgtgatttct gctgaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa 1737

<210> 187
<211> 1132
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1131)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1132)
<223> n equals a,t,g, or c

<400> 187
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atcagacaac tccctgcatg caaaccccta gtaccctctc acacccgcac ccgcgcctca 360
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cagacgcggc gatggcatca cacagacggt gatgatgtca cacacagaca cagtgacaac 660

acacaccatg acaacgacac ctatagatat ggcaccaaca tcacatgcac gcatgccctt 720
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<210> 188
<211> 1267
<212> DNA
<213> Homo sapiens

<220>
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<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<400> 188
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1260
aaaaata 1267

<210> 189
<211> 3787
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (22)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (155)
<223> n equals a,t,g, or c

<400> 189
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aaaaaaa 3787

<210> 190
<211> 554
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (520)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (542)
<223> n equals a,t,g, or c

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gctgaggcat tttggagatc aaagatgggt agaaaagatg ctgctactat aaaacttcct 120
gttgatcagt acagaaaaca aattggtaaa caggattata aaaaaactaa acctatttta 180
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cngggatact tgta 554

<210> 191
<211> 874
<212> DNA
<213> Homo sapiens

<400> 191
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gaagttgggt ttaggacagc aggtgctgtt ccgagactca gtcctaaagg gtttttttc 780
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<210> 192
<211> 2103
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (140)
<223> n equals a,t,g, or c

<400> 192
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gttggtgtct tcatgggcag aaataggttg taaaggtggc caactctcca ggtgagagag 120
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gttcaagaaa cccatgaaaa aggacatagt ggaagatgaa gatgatgact ttctgaaagg 240
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<210> 193
<211> 1317
<212> DNA
<213> Homo sapiens

<220>
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<222> (1314)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1315)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1316)
<223> n equals a,t,g, or c

<400> 193
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<210> 194
<211> 1252
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1231)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1240)
<223> n equals a,t,g, or c

<400> 194
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<210> 195
<211> 1688
<212> DNA
<213> Homo sapiens

<400> 195
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tcatgtctcc cttcatgttt ttttttaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1680
aaaaaaaa                                                          1688

<210> 196
<211> 756
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (756)
<223> n equals a,t,g, or c

<400> 196
ggcacgagcc gccctcggcg tcctctgtag cgggcgacct aggccgcggg acccggacgg 60
aggtagaggc cagggcagcg cgtccgggag cggagtccgc gcccgccgcc gccatgccgg 120
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acagctggga caaggatgtg taccctgagc ccccgcgccg cacgccggtg cagcccaatc 180
ccatcgtcta catgatgaaa gcgttcgacc tcatcgtgga ccgacccgtg accctcgtga 240
gagaatttat agagcggcag cacgcaaaga acaggtatta ctactaccac cggcagtacc 300
gccgcgtgcc agacatcact gagtgcaagg aggaggacat catgtgcatg tatgaagccg 360
aaatgcagtg gaagagggac tacaaagtcg accaagaaat tatcaacatt atgcaggatc 420
ggctcaaagc ctgtcagcag agggaaggac agaactacca gcagaactgt atcaaggaag 480
tggagcagtt cacccaggtg gccaaggcct accaggaccg ctatcaggac ctgggggcct 540
acagttctgc caggaagtgc ctggccaaac agaggcagag gatgctgcaa gagagaaaag 600
ctgcaaaaga ggccgccgct gccacctcct gaggcagctg tgggtgcccc tgctgtgtgg 660
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaattn 756

<210> 197
<211> 1471
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<400> 197
ttggctgctc ctgacctcag caaaccaaga gggtatcact gggatacatc agattggatg 60
ccaagcgttc ctctgccgga catacaagag ttccccaact atgaggtgat tgatgagcag 120
acacccctgt actcagcaga tccaaacgcc atcgatacgg actattaccc tggaggctac 180
gacatcgaaa gtgattttcc tccaccccca gaagacttcc ccgcagctga tgagctacca 240
ccgttaccgc ccgaattcag caatcagttt gaatccatcc accctcctag agacatgcct 300
gccgcgggta gcttgggttc ttcatcaaga aaccggcaga ggttcaactt gaatcagtat 360
ttgcccaatt tttatcccct cgatatgtct gaacctcaaa caaaaggcac tggtgagaat 420
agtacttgta gagaacccca tgccccttac ccgccagngt atcaaagaca cttcgaggcg 480
cccgctgtcg agagcatgcc catgtctgtg tacgcctcca ccgcctcctg ctctgacgtg 540
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ctctcaactc cccccaaagt gcctgacttt agtgaaccta gaggtgatgt gagtaatccg 720
cgctgttctt tgcagcagtg cttccaagct ttttttggtg agccgaatgg gcatggctgc 780
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cctgtttaga accaaaacca ccatgacaca gtttttatag tgtctgtata tttgtgatgc 1380
aatggtcttg taaaggtttt taatgaaaac taccattagc cagtctttct tactgacaat 1440
aaattattaa taaaataaaa aaaaaaaaaa a 1471

<210> 198
<211> 692

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<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<400> 198
gtgaattggt aattcgacct cccctatagg gccgaatttg ggntaccggg cccccccctt 60
agtgcggctt gctcttggaa gttcaggctc ggttgtcttt tgggagccat ggagagtgac 120
ttttatctgc gttactacgt ggggcacaag ggcaagttcg gccacgagtt cctggagttt 180
gagtttcgac cggacgggaa gttaagatat gccaacaaca gcaattacaa gaatgatgtc 240
atgatcagaa aagaggctta tgtacataaa agcgtgatgg aggaactgaa gagaataatt 300
gacgacagtg aaattaccaa agaggatgat gcattgtggc ctcctcctga ccgagtgggc 360
cggcaggagc ttgaaatcgt cattggagat gaacacattt cttttacaac atcaaaaatt 420
ggttccctta ttgatgtcaa tcaatccaag gatccagaag gcttacgagt attttattat 480
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ccaatctaga ctgaatattg gtgtggacat gggggtggg tgggagtaga aaattttgtg 600
tatatcaggg cagtattttt ttatgaacta taaatgattg tctttaataa atatgtgata 660
aaatccaatt tttattattt tataaagacc tg                               692

<210> 199
<211> 1573
<212> DNA
<213> Homo sapiens

<400> 199
ctcgtgccga attcggcacg agccggcgcc agctacgccg ctgccgctgt cactatggcc 60
cattacaaag ccgccgactc gaagcgtgag cagttccgga ggtacttgga gaagtcgggg 120
gtgctggaca cgctgaccaa ggtgttggta gccttatatg aagaaccaga gaaacctaac 180
agtgctttgg atttttaaa gcatcactta ggagctgcta ctccagaaaa tccagaaata 240
gagctgcttc gcctagaact ggccgaaatg aaagagaagt atgaagctat tgtagaagaa 300
aataaaaaac tgaaagcaaa gcttgctcag tatgaaccac ctcaggagga gaagcgtgct 360
gaataggatt cttctcagtt tgaaagacaa tgaaaaatgg ttttgtatga cttgaatagt 420
ttgtatagta tataatcttt tctgaacaga tgctatagaa ctcttttaat atgtttaatt 480
cacctatcac actctgttaa aaacacatag aatcatcaat aaaaactcaa tataactttc 540
tttgggtctt aaagcaggag aatccaaagt aaatcctgaa caaaacctaa acacagccat 600
ctaactcatt accttaaaag acattctgkt tattagtctg attaggaatg atggcactgg 660
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gtgaaagatt tgtaaatggt aaagcactat attcttgtta aaaaaaaaaa aaaaaaaaaa 1560
aaaaaaaaaa aaa                                                    1573

<210> 200
<211> 2742
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<400> 200
gggtcgaccc acgcgtccgc ccacgntccg tgaatggtga actccagaaa gccattgact 60
tattcacaga tgccatcaag ctgaatcctc gcttggccat tttgtatgcc aagagggcca 120
gtgtcttcgt caaattacag aagccaaatg ctgccatccg agactgtgac agagccattg 180
aaataaatcc tgattcagct cagccttaca agtggcgggg gaaagcacac agacttctag 240
gccactggga agaagcagcc catgatcttg cccttgcctg taaattggat tatgatgaag 300
atgctagtgc aatgctgaaa gaagttcaac ctagggcaca gaaaattgca gaacatcgga 360
gaaagtatga gcgaaaacgt gaagagcgag agatcaaaga aagaatagaa cgagttaaga 420
aggctcgaga agagcatgag agagcccaga gggaggaaga agccagacga cagtcaggag 480
ctcagtatgg ctcttttcca ggtggctttc ctggggaat gcctggtaat tttcccggag 540
gaatgcctgg aatgggaggg ggcatgcctg gaatggctgg aatgcctgga ctcaatgaaa 600
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aaccgatttt ttttatccaa tgtgaattat aaatgagata atccacagtt attcattgtg 2040
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attgctacgt ttctaccagt gtttcaattt aaagtgctag tgtttaaaaa cattttcaag 2280
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<210> 201
<211> 1417
<212> DNA
<213> Homo sapiens

<400> 201
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aatgtcatag gtatgcataa gatgactcca ccaattaaag atctgctgcc tagactcacc 180
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attgctgaca ggggagctga atatgtatct gcaagagagt ggatgaggat ttgctttgag 300
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ggttatattg caaaggccat tggccctcat gatgtattgg ctacacttct gaacaacctc 420
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ggaaaagact acatttatgc cgtaacaccg ttacttgaag atgctttaat ggatagagac 660
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ttaaacagta aatgccagta gtgaccaaga acacagtgat tatatacact atactggagg 1260
gatttcattt ttaattcatc tttatgaaga tttagaactc attccttgtg tttaaaggga 1320
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<210> 202
<211> 1512
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (855)
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1512)
<223> n equals a,t,g, or c

<400> 202
cttagaagac cctatgcaag gtacaacggc ttgtaccggt ccggaattcg cgggcgcgkc 60
aacttggaga gtactcgggt tcgtgaactt cccggaggcg caatgagctg cattaacctg 120
cccactgtgc tgccyggctc ccccagcaag acccgggggc agatccaggt gattctcggg 180
ccgatgttct caggaaaaag cacagagttg atgagacgcg tccgtcgctt ccagattgct 240
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acacatgacc ggaacaccat ggaggcrctg cccgcctgcc tgctccgaga cgtggcccag 360
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tgggacttgg atcccagggg cttatctctt caagtgtgga gagggcaggg tccacgcctc 1440
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aaaaaaaaaa an 1512

<210> 203
<211> 419
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<400> 203
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tccggggagc ctggagctgg ggggaaggcc ggggacagcc cggccctgcc ccctccccccg 120
ctgggagccc agcaacttct gaggaaagtt tggcacccat ggcgtggcgg tgccccagga 180
tgggcagggt cccgctggcc tggtgcttgg cgctgtgcgg ctggggcgtg catggccccc 240
aggggcacgc argctgaaga aagtcccttc gtgggcaacc cagggaatat cacaggtgcc 300

cggggactca cgggcaccct tcggtgtcag ctccaggttc agggagagcc ccccgaggta 360
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<210> 204
<211> 2833
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2802)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2822)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2831)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2832)
<223> n equals a,t,g, or c

<400> 204
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caagagcccc ccagtgctga gccacgaatt cgtcctgcag aatcacgcgg acatcgtctc 240
ctgtgtggcg atggtcttcc tgctggggct catgtttgag ataacggcaa aagcttctat 300
catttttgtt actcttcagt acaatgtcac cctcccagca acagaagaac aagctactga 360
atcagtgtcc ctttattact atggcatcaa agatttggct actgttttct tctacatgct 420
agtggcgata attattcatg ccgtaattca agagtatatg ttggataaaa ttaacaggcg 480
aatgcacttc tccaaaacaa aacacagcaa gtttaatgaa tctggtcagc ttagtgcgtt 540
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cccaactatc ttatggaggg cttatcccca taacctgatg acatttcaaa tgaagttttt 660
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ggcatttatg atgtggaagt tcattaattt tcagcttcga aggtggaggg aacattctgc 1140
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aggaacagaa aatggtgtga atggaacatt aacttcaaat gtagcagact ctccccggaa 1260
taaaaaagag aaatcttcat aatgaattat aaactaattg attaatgtcc ccaaagaaat 1320

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ggattattgc tatgaatgaa aaaaatattt tagcttagac taagctacct gccttcaaaa 1500
tagtttaggg accaccacca tattttattt tgtttttatt tttgaacatt tttctaatga 1560
tttggagaga aaactattta caaaaattcc acatatcagt gatacaattt cttgctgtca 1620
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<211> 1996
<212> DNA
<213> Homo sapiens

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<222> (1620)
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<212> DNA
<213> Homo sapiens

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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2250

<210> 210
<211> 838
<212> DNA
<213> Homo sapiens

<400> 210
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gcggtgatta aataatgaaa gagttcgacg cggccgggaa tttaggaggt aaatatcc 838

<210> 211
<211> 1213
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1206)
<223> n equals a,t,g, or c

<400> 211
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ttctacgatg agtccaagcc tttcacctgc ctggacggtt cggccaccat cccatttgat 300
caggtcaacg atgactattg cgactgcaaa gatggctctg acgagccagg cacggctgcc 360
tgtcctaatg gcagcttcca ctgcaccaac actggctata agcccctgta tatcccctcc 420

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<210> 212
<211> 969
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (922)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (955)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (958)
<223> n equals a,t,g, or c

<400> 212
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gttgtatgta aaagctaagg aaacctttc ttttggaaga tcagtataaa catgctgctt 180
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aaaaaaaaaa aaaaaaaaaa anaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaanccncg 960
gggggggg 969

<210> 213
<211> 1694
<212> DNA
<213> Homo sapiens

<400> 213
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gcgatggcca aggtgtcggt gctgaacgtg gcggtcctgg agaacccgag ccctttccac 180
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acctaccatg gacaggagtt catccgagtg ggctactacg tcaacaacga gtacctcaac 480
cctgagctgc gtgagaaccc gcccatgaag ccagatttct cccagctcca gcggaacatc 540
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aaaaaaaaaa aaaa 1694

<210> 214
<211> 1210
<212> DNA
<213> Homo sapiens

<400> 214
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tggttaccat tatccccaac ttcagtctgg acaagatcta cctcatcggg ggggacctgg 180
ggccttttaa ccctggttta cccgtggaag tgcccctgtg gctggcgatt aacctgaaac 240
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tgagggatca tgaacgaaag gaagaaactt ttaccccaat gcccagccct tactacatgg 360

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gctttgtgag acagcaggag gcacatgcca agctggataa cttgaccttg atggagatca 540
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tccagcctct ggagagtact cagtctcagg acttctagag aaaggcctgg tgcaggcggc 660
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<210> 215
<211> 1776
<212> DNA
<213> Homo sapiens

<400> 215
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gtcgggcttc ctcggcggct gaggctctcc gccttggcgg gcgctggtcg cttttgcatt 180
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atgtattgtc aagtactgta caatgaaatt gtttaaattt taatatgatt taagcttttt 1740
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<210> 216
<211> 1418
<212> DNA
<213> Homo sapiens

<400> 216
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gccatacaga attgtgtatt caccagcatc atgaaacagt tgtggtcttt tgagttgatc 180
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aaagaagaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa                          1418

<210> 217
<211> 2200
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2188)
<223> n equals a,t,g, or c

<400> 217
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cacgagtgcc gccagcatgt ctgacaaact gccctacaaa gtcgccgaca tcggcctggc 120
tgcctgggga cgcaaggccc tggacattgc tgagaacgag atgccgggcc tgatgcgtat 180
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<210> 218
<211> 1853
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (890)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1794)
<223> n equals a,t,g, or c

<400> 218
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<213> Homo sapiens

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<222> (1090)
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<223> n equals a,t,g, or c

<220>
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<223> n equals a,t,g, or c

<400> 219
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<212> DNA
<213> Homo sapiens

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<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<222> (7)
<223> n equals a,t,g, or c

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<222> (17)
<223> n equals a,t,g, or c

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<222> (22)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (125)
<223> n equals a,t,g, or c

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<212> DNA
<213> Homo sapiens

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<210> 223
<211> 2921
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (2919)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2920)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2921)
<223> n equals a,t,g, or c

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<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (4391)
<223> n equals a,t,g, or c

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<222> (2959)
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<212> DNA
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<211> 2346
<212> DNA
<213> Homo sapiens

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<210> 230
<211> 2002
<212> DNA
<213> Homo sapiens

<400> 230
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aaaaaaaaaa aaaaaaaaaa aa 2002

<210> 231
<211> 994
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (394)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (853)
<223> n equals a,t,g, or c

<400> 231
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gtgacatctg atgctgtgga acttgcaaat cgaagtgata actcttctga tagcagctta 300
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tttgttcgta cacctgaaag tgttcacgca agtnattcat caagtgactc atcttttgaa 420
ccaataccat tgactataaa agctattttt gaaagattca agaacaggaa aaagagatat 480
aaaaaaaaga aaaagaggag gtaccagcca acaggaagac cacggggaag accagaagga 540
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<210> 232
<211> 486
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (49)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (440)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (485)
<223> n equals a,t,g, or c

<400> 232
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cacccaagtg tcccccaaag agcccagtac agtgtctgcc tccagcttcc tctggctgtg 240
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gcgccaccac cgatgccggc gccagaggyc caactcctgt gacagggcag tggtcagcaa 360
ggcgrgggyt ctggstgckg cayggttctg gggctgctg ctgatccaga tcctgatgct 420
gagacaagcg atctttggan gaaacaagaa ttcccaagag gccaagaaca gccccatctg 480
gaagnc 486

<210> 233
<211> 2081
<212> DNA
<213> Homo sapiens

<400> 233
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<210> 234
<211> 516
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (490)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (498)
<223> n equals a,t,g, or c

<400> 234
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ctccaacccg gggtgcctct gctgtggtcc ttcggtgtga aggcgagtsc tggctctttg 180
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<210> 235
<211> 1129
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (807)
<223> n equals a,t,g, or c
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<400> 235
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gagaggaggg gcaggaccag atcttttgag agctgagggt tgagggcatt gagccaacac 180
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aatggaactg aggaagatta taactttgtc ttcaaggtgg tgctgatcgg cgaatcaggt 300
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accaccatcg ggttgagtt ctccacccgc actgtgatgt tgggcaccgc tgctgtcaag 420
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cgtggtgcag tgggggccct cctggtgttt gacctaacca agcaccagac ctatgctgtg 540
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gagctagcct ttgagactgt cctgaaagaa atctttgcga aggtgtccaa gcagagacag 780
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<210> 236
<211> 1045
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (973)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1001)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1014)
<223> n equals a,t,g, or c

<400> 236
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acagcactgg gcctggtggg gctctggtgg gctgagggta ccgccgtggc cacccgtggt 120
ttcttttttg ggtacacacc tgctgtctgg ggcgtggtgc tcaaccaggc cttcggcggg 180
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ctgtccattg tgctgtccac tgttgcctcc attcgcctct ttggcttcca cgtggaccca 300
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aatgcttctg gagccaggaa aggca 1045

<210> 237
<211> 690
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (666)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (678)
<223> n equals a,t,g, or c

<400> 237
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<210> 238
<211> 1873
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (568)
<223> n equals a,t,g, or c

<400> 238

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<210> 239
<211> 905
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (873)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (874)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (897)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (898)
<223> n equals a,t,g, or c

<400> 239
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ggggg 905

<210> 240
<211> 1484
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1457)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1471)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1480)
<223> n equals a,t,g, or c

<400> 240
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agatatacaa atatacagat atacaaataa gggtgaagat ggagggaatc tgataaagac 180
atcttataaa ttcaacagac acaaaagaat ttgatctccc ataagcaact gtgaaattac 240
aataacagat cctgggaagt tctacaattc taattcagtt ttttcaaggg ggaacatggc 300

aaaggtgttc agtttcatcc ttgttaccac cgctctgaya atgggcaggg aaatttcggc 360
gctcgaggac tgtgcccagg agcagatgcg gctcagagcc caggtgcgcc tgcttgagac 420
ccgggtcaaa cagcaacagg tcaagatcaa gcagcttttg caggagaatg aagtccagtt 480
ccttgataaa ggagatgaga atactgtcgt tgatcttgga agcaagaggc agtatgcaga 540
ttgttcagag attttcaatg atgggtataa gctcagtgga ttttacaaaa tcaaacctct 600
ccagagccca gcagaatttt ctgtttattg tgacatgtcc gatggaggag gatggactgt 660
aattcagaga cgatctgatg gcagtgaaaa ctttaacaga ggatggaaag actatgaaaa 720
tggctttgga aattttgtcc aaaaacatgg tgaatattgg ctgggcaata aaaatcttca 780
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gaatattggg gaatattctg gaacagctgg agattccctt gcggggaatt ttcatcctga 960
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taggccaaat gattttattc caaatgtaat ttaattgctg ctgttgggct ttcgtttctg 1260
caattcagct ttgtttaaag tgatttgaaa aatactcatt ctgaacatat ccatgcgcaa 1320
tcatgataac tgttgtgagt agtgcttttc attcttctca cttgcctttg ttacttaatg 1380
tgctttcagt acagcagata tgcaatattc accaaataaa tgtagactgt gttaawaaaa 1440
aaacaacaaa tatgaanaaa aaaaaaaaaa ngggggctn tttt 1484

<210> 241
<211> 1521
<212> DNA
<213> Homo sapiens

<400> 241
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tgcgcccctg gtcaatgccc tcctgacagc acccgagttc cttatttaca ctggctgcat 120
ggtttgtgtg tttctgtttt gtttctctcc ccctgcaggg ctgtttkcgg ggtggggtgg 180
ggggttcgct atgtcggatg acgattcgag ggccagcacc agctcctcct catcttcgtc 240
ttccaaccag caaaccgaga aagaaacaaa cacccccaag aagaaggaga gtaaagtcag 300
catgagcaaa aactccaaac tcctctccac cagcgccaag agaattcaga aggagctggc 360
ggacatcact ttagaccctc cacctaattg cagtgctggt cccaaaggcg ataacatcta 420
tgaatggaga tcaaccattc tagggcctcc aggatccgtg tatgagggtg gtgtattctt 480
tctcgatatc acttttacac cagaatatcc cttcaagcct ccaaaggtta catttcggac 540
aagaatctat cattgtaata ttaacagtca aggtgttatt tgcttggaca tattgaaaga 600
taattggagt ccagcactaa ccatttctaa agtcctcctt tctatctgct cacttcttac 660
agactgtaat cctgccgacc ccttggtggg aagtattgcc actcagtata tgaccaacag 720
agcagaacat gacagaatgg ccagacagtg gaccaagaga tacgctacat aaattggggt 780
ttcacaattc ttacattatt tgtctgtcac agaagagagc tgcttatgat tttgaagggg 840
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ttggtacagg ttacacatat ggccatttat gtaaagtccc tctaagacta catacttttt 1140
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tggaatagga gttgctcagt ggattggttc tatgttgtgg actacttaag tctgcatttg 1440

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tttcttttgc cttttggttg c 1521

<210> 242
<211> 1144
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1093)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1105)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1106)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1139)
<223> n equals a,t,g, or c

<400> 242
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cacattgtac agtagtacct ttgaagcagc ctactctaca cattgcagac aaagatccaa 120
tcccagagga gcaggaatta gaagcttatg tagatgatat agatattgat agtgatttca 180
gaaaggatga tttttattac ttgtctcaag aagacaaaga gagacagaag cgtgagcatg 240
aagaatccaa gagggtgctc caagaattaa aatctgtgct gggatttaaa gcttcagagg 300
cagaaaggca gaagtggaag caacttctat ttagtgatca tgtgtttctt catatagctt 360
taaaattatg ctattgacat tatgggaaag atttatcaat gagagaaatg tgtctctttt 420
tcagccgtgt tgaaatcctt gtctcctgta gacccagtgg aacccataag taattcagaa 480
ccatcaatga attcagatat gggaaaagtc agtaaaaatg atactgaaga ggaaagtaat 540
aaatccgcca caacagacaa tgaaataagt aggactgagt atttatgtga aaactctcta 600
gaaggtaaaa ataaagataa ttcttcaaat gaagtcttcc cccaaggagc agaagaaaga 660
atgtgttacc aatgtgagag tgaagatgaa ccacaagcag atggaagtgg tctgaccact 720
gcccctccaa ctcccaggga ctcattacag ccctccatta agcagaggct ggcacggcta 780
cagctgtcac cagattttac cttcactgct ggccttgctg cagaagtggc tgctagatct 840
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gaagaaaata aaaatgagat agaagaaaag taagaaccaa gattcatatg aagtgatatt 960
agattgttcc ttttacaaaa gtgtttagct tcaagactgg aaagggaata tgagtgtaag 1020
tttactatat ataaagctaa gatgtggatt tacaggaaga accctggttt gaataactga 1080
tskgaaatta ggnaaaactt gtccnnggca tttcccgttg aaagttcccc cttaaaganc 1140
cccg 1144

<210> 243

<211> 934
<212> DNA
<213> Homo sapiens

<400> 243
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tttcatgtca tgagaccagt aggttttcag ctatatgcca aggagatggc acgtggagtc 120
cccgaacacc atcatgtgga gacatttgca attttcctcc taaaattgcc catgggcatt 180
ataaacaatc tagttcatac agctttttca aagaagagat tatatatgaa tgtgataaag 240
gctacattct ggtcggacag gcgaaactct cctgcagtta ttcacactgg tcagctccag 300
cccctcaatg taaagctctg tgtcggaaac cagaattagt gaatggaagg ttgtctgtgg 360
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tggttggtcc ccaaagtatc acttgctctg ggaacagaac ctggtaccca gaggtgccca 480
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agtgtctccc aaacccagag gatgtgaaaa tggccctgga ggtatataag ctgtctctgg 600
aaattgaaca actggaacta cagagagaca gcgcaagaca atccactttg gataaagaac 660
tataattttt ctcaaaagaa ggaggaaaag gtgtcttgct ggcttgcctc ttgcaattca 720
atacagatca gtttagcaaa tctactgtca atttggcagt gatattcatc ataataaata 780
tctagaaatg ataatttgct aaagtttagt gctttgagat tgtgaaatta ttaatcatcc 840
tctgtgtggc tcatgttttt gcttttcaac acacaaagca caaatttttt ttcgattaaa 900
aatgtatgta taaaaaaaaa aaaaaaaaac tcga 934

<210> 244
<211> 915
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (210)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (243)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (244)
<223> n equals a,t,g, or c

<400> 244
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ccgcctgccc tggagcagga gcgtattctg aaccccctgc tagaccgtgt caggaccgcc 120
gaccaccacc agctgcgctc actgactggc ctcatccgaa acctgtctcg gaacgctagg 180
aacaaggacg agatgtccac gaaggtggtn gagccacctg atcgagaagc tgccrggcas 240
gtnngggtga gaagtygccc ccagccgagg tgctggtcaa catcatagct gtgctcaaca 300
acctggtggt ggccagcccc atcgctgccc gagacctgct gtattttgac ggactccgaa 360
agctcatctt catcaagaag aagcgggaca gccccgacag tgagaagtcc tcccgggcag 420
catccagcct cctggccaac ctgtggcagt acaacaagct ccaccgtgac ttycgggcga 480

aggctatcgg aaggaggact tcctgggccc ataggtgaag ccttctggag gagaaggtga 540
cgtggcccag cgtccaaggg acagactcag ctccaggctg cttggcagcc cagcctggag 600
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tggggcaggg ctcaaggctg ctctggtgta tggggtggtg acccagtcac attggcagag 780
gtgggggttg gctgtggcct ggcagtatct tgggatagcc agcactggga ataaagatgg 840
ccatgaacag tcaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 900
aaaaaaaaaa aaaac 915

<210> 245
<211> 1276
<212> DNA
<213> Homo sapiens

<400> 245
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acaagatgaa gcaagatgcc tcaagaaatg ctgcctacac tgtggattgt gaagattatg 180
tgcatgtggt agaatttaat ccctttgaga atggggattc aggaaaccta attgcatatg 240
gtggcaataa ttatgtggtc attggcacgt gtacgtttca ggaagaagaa gcagacgttg 300
aaggcattca gtataaaaca cttcgaacat ttcaccatgg agtcagggtt gatggcatag 360
cttggagccc agagactaga cttgattcat tgcctccagt aatcaaattt tgtacttcag 420
ctgctgatat gaaaattaga ttatttactt cagatcttca ggataaaaat gaatataagg 480
ttttagaggg ccataccgat ttcattaatg gtttggtgtt tgatcccaaa gaaggccaag 540
aaattgcaag tgtgagtgac gatcacacct gcaggatttg gaacttggaa ggagtgcaaa 600
cagctcattt tgttcttcat tctcctggca tgagtgtgtg ctggcatcct gaggagactt 660
ttaagctaat ggttgcagag aagaatggaa caatccggtt ttatgatctt ttggcccaac 720
aggctatttt atctcttgaa tcagaacaag tgccattaat gtcagcacac tggtgcttaa 780
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gtttcaaatt catcatttag gacaccctca gcccatcctc atgggttctg tagccgttgg 1020
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gttgttttgg gtgactgaag tataaagtgt tttctgtacc ttagattcac aaactttgta 1140
tttttagtac atattttgaa gaatttctat agtacatatt ttgaagaatt tttatatcaa 1200
atataccgta tactttagaa aatgtctcag ttgcttttat taaataaaat gttgatggtt 1260
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<210> 246
<211> 3366
<212> DNA
<213> Homo sapiens

<400> 246
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ctctctgaca ccatgatcat ggactccatt gctgccttcc tcgtgttgcc caaccgatta 120
ctggtgcccc ttgtgcctga ccttcaagat gtggctcagt tgcgttcccc tctgcccagg 180
ggcattattc gaattcacct gctggctgct cgagggctga gttccaagga caaatatgtg 240
aagggcctga ttgagggcaa gtcagaccca tatgcacttg tgcgtttggg tacccagaca 300
ttctgcagtc gtgtcattga tgaagaactc aacccacagt ggggagagac ttatgaggtg 360
atggtacacg aggtcccagg gcaggagatt gaagtggagg tgttcgacaa ggatccagat 420

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aaagatgact ttctgggcag aatgaagctg gatgtaggga aggtgttaca ggctagcgtt 480
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ctgtcacttt tgtcagatgc agagaaactg gagcaggttc tacagtggaa ttggggagtc 600
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tctttaacta gatggtcacc ttcttcccta ccacacatgg gtgggaaggt ggacaggcta 2940
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<210> 247
<211> 2148
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1259)
<223> n equals a,t,g, or c

<400> 247
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gtgacgcact ttacggcggc agcgtaagtg cgtgacgctc gtcagtggct tcagttcaca 120
cgtggcgcca gcggaggcag gttgmtgtgt ttgtgcttcc ttctacagcc aatatgaaaa 180
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agcctaggaa agacccagga gttccaaaca gtgctccctt taaggaggct cttcttaggg 360
aagctgagct aaggaaacag aggcttgaag aactaaaaca gcagcagaaa cttgacaggc 420
agaaggaact agaaaagaaa agaaaacttg aaactaatcc tgatattaag ccatcaaatg 480
tggaacctat ggaaaaggag tttgggcttt gcaaaactga gaacaaagcc aagtcgggca 540
aacagaattc aaagaagctg tactgccaag aacttaaaaa ggtgattgaa gcctccgatg 600
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gttgaaggtg ctgccaaact gctgtggtct gagtggacag ggtaagcttt cttttctgtt 1380
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gcctcattag cttactattg ccatcccccct acatcttggr ctcctcctcc atattttaat 1500
gagagtattg tggtagacat gaaaagcggc ttcaatctgg aagaactgga aaagaacaat 1560
gcacagagca taagagccat caagggccct catttggcca atagcatcct tttccagtct 1620
tccggtctga caaatggaat aatagaagaa aaggacatac atgaagaatt gccaaaacgg 1680
aaagaaagga agcaggagga gagggaggat gacaaagaca gtgaccagga aactgttgat 1740
gaagaagttg atgaaaacag ctcaggcatg tttgctgcag aagagacagg ggaggcactg 1800
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tgcatgagct gtgtaaattt tgtgaatatg tattatatta aaaccaggca acttggaatc 2040
cctaaattct gtaaaaagac aattcatctc attgtgagtg gaagtagtta tctggaataa 2100
aaaaagaaga tacctattaa aaaaaaaaaa aaaaaaaaaa aaaaaaa 2148

<210> 248
<211> 2225
<212> DNA

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<213> Homo sapiens

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<400> 248
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tatggtttgt cgtcagtccc ttccatgcgt ccatacctct ggtggkaaga agtacatcac 180
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cattcaatag tgtgctgtca aagtgtgctt agctcacctg gatataccta cattgttaaa 2160
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aaaaa                                                             2225

<210> 249
<211> 1204
<212> DNA
<213> Homo sapiens
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<220>
<221> misc feature
<222> (1197)
<223> n equals a,t,g, or c

<400> 249
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ascactcagg ctggtcctgg gggtggggct gtaggggaaa gtgctaaagc cgctgagtga 120
agtaagaact ctgctagaga ggaaatggct gcttcatcat catcctcctc agctggtggg 180
gtcagtggaa gttctgtcac tggatctggt ttcagtgtct cagaccttgc cccaccacgg 240
aaagcccttt tcacctaccc caaaggagct ggagagatgt tagaagatgg ctctgagaga 300
ttcctctgcg aatctgtttt tagctatcaa gtggcatcca cgcttaaaca ggtgaaacat 360
gatcagcaag ttgctcggat ggaaaaacta gctggtttgg tagaagagct ggaggctgac 420
gagtggcggt ttaagcccat cgagcagctg ctgggattca ccccctcttc aggttgatac 480
tgcctggatg gtcacctctg gtgcgcagca agtgcaaagc cagtggggga ctttctcaca 540
gcttacatag ccatccagag atccacagct acgtcactga attgttaatg cacatttgta 600
cttggtttct ctgtatctat tcacaggcaa caaatactta tatgtgtgat ctttcaggga 660
atgttttgtt tatttgtttt taaaagtatt gggaatcaga ttaagacaat cagtttcaga 720
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taaaaataaa gcagtaagca aaatcctttt aaacacagaa atcctgagtt cttctcattg 1140
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aaaa 1204

<210> 250
<211> 1314
<212> DNA
<213> Homo sapiens

<400> 250
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gcaaaattgg gtccaaaacg cctttgatgg cagctgcaac tttttccgtt ggttggaaca 120
ccttcgcttg ctcagagtca ttggaaaaac cactgaactg gctacttttt aattactatt 180
tgacaacctg ccttcagtct tcagttaata agcaccgaca tatgtttgta aaacaagttg 240
atatggatca tgtcatgaag gctaaatcca tcagagagtt tgataagcga ttcacttcag 300
tcatgtttgg ataccaaaca attgatgatt attatactga tgccagtccg agtcctagac 360
tgaagtcagt aggaattcca gtattgtgtc taaattctgt ggatgatgtt ttctcaccca 420
gtcatgctat tccaatagaa actgctaagc aaaatcctaa tgttgctttg gtccttactt 480
cttatggagg ccatattggt tttctggagg gaatctggcc aagacagtcc acttacatgg 540
atcgtgtctt caagcaattt gtgcaagcca tggttgagca tggacatgaa ctctcttaac 600
atgtagttct ttgggtgcat tttgtctgaa ccacaattgt gaaggcagct cagcttagtg 660
cacaaatttt aactgttgta tataaagcaa ataagccagc agatgggtga agaggtccag 720
aatgatatgc aaaaactact ttttagagaa acaaaacaac tttgtagcaa caaattaaat 780
atagtattag attgttactt acgtagattt tatttttact atgccttacc aagtacatcc 840
ttaaacaaag tagtatgtac atgaaattgc acttaaccaa aactattgtg taaaacaaat 900
tttaattcct cagggtttta atttaaacta gtattttttt agattatttg ttttaggtga 960

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ggtacattcc taagggtatt tatagttgat gataacatga aaactgaaat aagataaaat 1080
acaacgtgct aaatctttta tgtattctaa ctttaaaaga caagtgcaac aaagttagac 1140
tgacttctat atgtgctctt ttactctgat aatattaaat taggactaac ttatgtttta 1200
taatgattat aatttacatg cttattttta aaatagtata tgtggacaca tatatatcat 1260
tatattaaaa taaattctac cattttaaat tggaaaaaaa aaaaaaaaaa aaaa       1314

<210> 251
<211> 1159
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1132)
<223> n equals a,t,g, or c

<400> 251
cctgcctcag cctcctcagt agctgggact acaagtgcct gccaccacgc ctgggttatt 60
ttttatattt ttagtagaga cggggtttca ctgtgttagc caggatggtc tcgatctcca 120
ggatggtctc gatctccagg atggtctcga tctcctgacg tcgtgatcca cccgcctcgg 180
cctcccaaaa tgctgggatt acaggtgtga gccactgtgc ccggccaaaa gaacagaaat 240
tattttatcc tgaagtaagc tgtttatatt tgggattata ctgaacctat ttgtccaata 300
acctgagttt tcaaataatt ttagttctat aagtactata attatataaa tattaatgaa 360
ttcagattag ctgaaaggaa aaaaagtaga agcctgacta cttggtgcta actactaaag 420
attttggcag aatcaatgtt ggatttggct ttcctgtccc ttccccatgc cagcccccca 480
gagtgttctg ccttgtgctg cctcccttca cckggagtgc cacacccctc tctctgccag 540
ttcagctctt cattcttcaa ggcctgacct tgtctgaccc ttgtgcctct aaacccgtgg 600
gccccacctc tcttggttcc tatgtcaggt gatgtttgtg tttttggtta tgcccatctc 660
catagccaga ccaagcactc tggaagccag ggttgggtgc ttatttatct gtttgccatg 720
cagaaaatat cttgcacaaa attacctctg ttaaggaatc tgaagctgaa tttagtttgg 780
ctgagtcagg gttgggtttt ttttaagggg ctgtggggtg aaatgttgac tggaagccac 840
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tcattgacag tttctgattg ccctgagcac caggtctcat cttgcatctc atcctggcct 960
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gaagttgggg ttgaggagag ccagatggct ggagtgggta tttgaaggkc tttctgtcac 1080
ctgttcagtg tggtctgccc cacccctgct gacmaagact gactgaaatg tnaaataata 1140
cagaccatct caactcaga                                              1159

<210> 252
<211> 2488
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
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<222> (64)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2334)
<223> n equals a,t,g, or c

<400> 252
tgtatgncca gctggtactc ctgcaggtac cggtccggat tcccgggtcg acccacgcgt 60
ccgnggacgc gtgggttgct cggcagcttg caaagcctga caacaccttg tttgtaaaca 120
gaacactttt tgatcaggtc cttgaattcc tttgtagtcc tgacgatgac tcccgacact 180
ctgaaagaca gcaggtcctt ttagaattgc tgcaggctgg aggcatagtt caatttgaag 240
agagtcgact catccggatg gcagaaaaag ctgagttcta tcaaatttgt gaatttatgt 300
atgaaagaga acaccaatat gacaaaatta ttgattgcya cttacgtgac cctctgcgag 360
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agaagcagtc tgtatggcag aaagcaatgg atcatattga ggaacycgkg kccctgaagc 480
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aaggtattca tgtaaatcaa gaattactgc aaatatctcc ttgtatcaca gagcagttca 660
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gctaccgtct ggaagaaact attcagatta ctcagaagta tcaacttcat gaagtcaccg 780
cttatctatt ggaaaagaaa ggagatattc atggtgcctt cctaataatg ttagagagac 840
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ccatgcaagt tttaaatagc atggcagcat ttattgccct tccatcaatc ttgcaaagaa 1140
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<210> 253
<211> 1554
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (81)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1496)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1523)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1535)
<223> n equals a,t,g, or c

<400> 253
actggnaatc cactactatt tggaaagctg gtccgcctgc aggtaccggt ccggaattcc 60
cgggtcgacc cacgcgtccg nggacgcgtg ggttctggtt ttgctctagt gtttgggttt 120
cttcgcggct gctcaagatg aaccgactct tcgggaaagc gaaacccaag gctccgccgc 180
ccagcctgac tgactgcatt ggcacggtgg acagtagagc agaatccatt gacaagaaga 240
tttctcgatt ggatgctgag ctagtgaagt ataaggatca gatcaagaag atgagagagg 300
gtcctgcaaa gaatatggtc aagcagaaag ccttgcgagt tttaaagcaa aagaggatgt 360
atgagcagca gcgggacaat cttgcccaac agtcattcaa catggaacaa gccaattata 420
ccatccagtc tttgaaggac accaagacca cggttgatgc tatgaaactg ggagtaaagg 480
aaatgaagaa ggcatacaag caagtgaaga tcgaccagat tgaggattta caagaccagc 540
tagaggatat gatggaagat gcaaatgaaa tccaagaagc actgagtcgc agttatggca 600
ccccagaact ggatgaagat gatttagaag cagagttgga tgcactaggt gatgagcttc 660
tggctgatga agacagttct tatttggatg aggcagcatc tgcacctgca attccagaag 720
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tgggactagg aaatatttat ctttccaaat ttgccataac agatttaggt ttctttcctt 900
tctttgaagg aaagtttaat tacattgctc ttttattttt tccattaaga gactcattgc 960
ttgggaaatg ctttcttcgt actaaaattt gattcctttt tttcttatga aaaacgaact 1020
cagtttaaaa gtatttttag ctcgtatgac ttgttttcat tcattaataa taatttgaaa 1080
taaaactaag gaaatggaat cttaaaagtc tatgacagtg taactctaca gtctcaaaat 1140

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gacctgataa attgataaga caaagatgag attattgggg ctgttcatat tatgattcag 1200
aatcattttc tattgtggta ttataggttg gttaaagtga tggccttttt gatgggtttt 1260
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tatcatgagt gggtattttg attctatggt tccctcagta ttacatcttg acttgtaatc 1380
aattatgaat atttcttgat atttaatgta taggacattt atttatactc aataaatatt 1440
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aggatccccc gagggggcc cangcttacg cgtgncatgc gacgtccaaa gccc       1554

<210> 254
<211> 1506
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1492)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1501)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1506)
<223> n equals a,t,g, or c

<400> 254
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ctttgtagct gagaacggct tgtttattgc tacaaagact ctattgacat tggtagcttc 180
agcggcagca gcttcttacg gtataaagct gttgcttcct gaagaggcta caagcatcct 240
tccctaggac tgctgtaagc tttgagcctc tagcaggaga catgcctcgg ggacgaaaga 300
gtcggcgccg ccgtaatgcg agagccgcag aagagaaccg caacaatcgc aaaatccagg 360
cctcagaggc ctccgagacc cctatggccg cctctgtggt agcgagcacc cccgaagacg 420
acctgagcgg ccccgaggaa gacccgagca ctccagagga ggcctctacc acccctgaag 480
aagcctcgag cactgcccaa gcacaaaagc cttcagtgcc ccggagcaat tttcagggca 540
ccaagaaaag tctcctgatg tctatattag cgctcatctt catcatgggc aacagcgcca 600
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cacacgtgga atcgagcaaa ctgaaagtca tgcattttgt ggcaagggtt cgtaaccgat 840
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ctatcctcaa ttcaggtgct aggggttatt ccgcccctta agtagatctg aggcagaccc 960
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tccgtttgtt gagaataaca atatgtttaa aaatataatt gaacaaattt ttttctttgt 1200
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ncccgn                                                            1506

<210> 255
<211> 654
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (632)
<223> n equals a,t,g, or c

<400> 255
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cccacgcgtc cgatctttcc gcgccggtga gtagcactct ctgagagctc caatttcatc 120
cgtctgccat cggcgccatc ctgcaatcta agccacaatg gtgcgcatga atgtcctggc 180
agatgctctc aagagtatca acaatgccga aaagagaggc aaacgccagg tgcttattag 240
gccgtgctcc aaagtcatcg tccggtttct cactgtgatg atgaagcatg gttacattgg 300
cgaatttgaa atcattgatg accacagagc tgggaaaatt gttgtgaacc tcacaggcag 360
gctaaacaag tgtggggtga tcagccccag atttgacgtg caactcaaag acctggaaaa 420
atggcagaat aatctgcttc catcccgcca gtttggtttc attgtactga caacctcagc 480
tggcatcatg gaccatgaag aagcaagacg aaaacacaca ggagggaaaa tcctgggatt 540
ctttttctag ggatgtaata catatattta caaataaaat gcctcatgga caaaaaaaaa 600
aaaaaaaaaa aaaaaagggs ggsggtctag anggtccaag cttacgtacg cgtg       654

<210> 256
<211> 1992
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (558)
<223> n equals a,t,g, or c

<400> 256
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gtacaactgg cagtatgtgc actgcctctt cctgtggtgc cgggtcctga gcactgcggg 120
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ccccagcgaa scctccagcc cttggtctac ccccttgccc aagtcatcat tggctgtatc 180
aagctcatcc ccactgcccg cttctacccg ctgcgaatgc actgcatccg tgccctgacg 240
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<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
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<222> (2273)
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<213> Homo sapiens

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<210> 259
<211> 1792
<212> DNA
<213> Homo sapiens

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<222> (107)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (487)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1306)
<223> n equals a,t,g, or c

<400> 259
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<211> 2048
<212> DNA
<213> Homo sapiens

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<222> (66)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (67)
<223> n equals a,t,g, or c

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<210> 261
<211> 1282
<212> DNA
<213> Homo sapiens

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<222> (1244)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1261)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1265)
<223> n equals a,t,g, or c

<400> 261
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<210> 262
<211> 599
<212> DNA
<213> Homo sapiens

<400> 262
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<210> 263
<211> 1261
<212> DNA
<213> Homo sapiens

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<211> 1020
<212> DNA
<213> Homo sapiens

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<400> 265
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<210> 266
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<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<400> 266
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<211> 1319
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<223> n equals a,t,g, or c

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<222> (61)
<223> n equals a,t,g, or c

<400> 267
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<210> 268
<211> 3694
<212> DNA
<213> Homo sapiens

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<222> (746)
<223> n equals a,t,g, or c

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<210> 269
<211> 1242
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<213> Homo sapiens

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<223> n equals a,t,g, or c

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<222> (31)
<223> n equals a,t,g, or c

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<222> (46)
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<220>
<221> misc feature
<222> (460)
<223> n equals a,t,g, or c

<220>
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<210> 270
<211> 2057
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<220>
<221> misc feature
<222> (2053)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2054)
<223> n equals a,t,g, or c

<400> 270
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<213> Homo sapiens

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<220>
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<222> (951)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (956)
<223> n equals a,t,g, or c

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<211> 1167
<212> DNA
<213> Homo sapiens

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<210> 273
<211> 2771
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (27)
<223> n equals a,t,g, or c
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<222> (42)
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<223> n equals a,t,g, or c

<220>
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<222> (2715)
<223> n equals a,t,g, or c

<220>
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<222> (2717)
<223> n equals a,t,g, or c

<400> 273
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taagccgaat t 2771

<210> 274
<211> 1889
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (87)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1676)
<223> n equals a,t,g, or c

<400> 274
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aaaaaaaaaa aaaaaataaa aaaaataaa 1889

<210> 275
<211> 604
<212> DNA
<213> Homo sapiens

<400> 275
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cacacagtgg aaagtgacaa agccagcgcc ttgccccagg ccccgcaggg tggagcccgt 240
ctgctcaggg ttgcaggccc agattctcca ctgctaccga gatcgcccgc atgaggtgct 300
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atgggaccac agccactgtg ccctgccgtt tcctgctggg cccctgcata tgcccctgag 480
cctggggctg ccacgtgttt aggaaacaaa gtatgcgcta ctgtctgaaa acaaataaag 540
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aaag 604

<210> 276
<211> 1381

<212> DNA
<213> Homo sapiens

<220>
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<222> (1348)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1358)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1359)
<223> n equals a,t,g, or c

<400> 276
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c 1381

<210> 277
<211> 1149
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (680)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1088)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1098)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1140)
<223> n equals a,t,g, or c

<400> 277
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<210> 278

<211> 811
<212> DNA
<213> Homo sapiens

<400> 278
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<210> 279
<211> 1260
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1249)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1252)
<223> n equals a,t,g, or c

<400> 279
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aaacgccacg taatgagtca aagctgtggc gcacgcgcag aagtacaagc taccggaagt 420
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tgtgttgtgc caatggtgga gaagaaaact tcggttcgct cccaggaccc cgggcagcgg 540
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<210> 280
<211> 1668
<212> DNA
<213> Homo sapiens

<400> 280
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<212> DNA
<213> Homo sapiens

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<211> 956
<212> DNA
<213> Homo sapiens

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<211> 1402
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (88)
<223> n equals a,t,g, or c

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<222> (97)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (131)
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<221> misc feature
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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1394)
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<400> 283
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<211> 675
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<221> misc feature
<222> (520)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (560)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (618)
<223> n equals a,t,g, or c

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<210> 285
<211> 1339
<212> DNA
<213> Homo sapiens

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<222> (1330)
<223> n equals a,t,g, or c

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<222> (1331)
<223> n equals a,t,g, or c

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<210> 286
<211> 1398
<212> DNA
<213> Homo sapiens

<400> 286
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<210> 287
<211> 926
<212> DNA
<213> Homo sapiens

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<222> (20)
<223> n equals a,t,g, or c

<220>
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<220>
<221> misc feature
<222> (896)
<223> n equals a,t,g, or c

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<222> (917)
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<210> 288
<211> 3094
<212> DNA
<213> Homo sapiens

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<210> 289
<211> 1983
<212> DNA
<213> Homo sapiens

<400> 289
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tggggttcca tcaccaagca ctctggagcc gcatccgcgt ccactgctgc agcgcgagct 180
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ctaccagctg gcggacggag gggagcctca gagtgtgcag gtggatggcc aggcccggac 480
ccagaaactc caggggctga tcccaggcgc tcgctatgag gtgaccgtgg tctcggtccg 540
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ggtccttcac cacccagccg ctggaggaag ccttctctgc cagcgatctc gcagcactgt 1920
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gga                                                               1983
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<210> 290
<211> 1298
<212> DNA
<213> Homo sapiens

<220>
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<222> (1224)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1231)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1262)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1285)
<223> n equals a,t,g, or c

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<400> 290
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cccacagatg gtgcatcccc tggcagaggc tcctgctcac agcctcactt ctaaccttct 180
ggaacccgcc caccactgcc aagctcacta ttgaatccac gccgttcaat gtcgcagagg 240
ggaaggaggt gcttctactt gtccacaatc tgccccagca tctttttggc tacagctggt 300
acaaaggtga aagagtggat ggcaaccgtc aaattatagg atatgtaata ggaactcaac 360
aagctacccc agggcccgca tacagtggtc gagagataat ataccccaat gcatccctgc 420
tgatccagaa catcatccag aatgacacag gattctacac cctacacgtc ataaagtcag 480
atcttgtgaa tgaagaagca actggccagt tccgggtata cccggagctg cccaagccct 540
ccatctycag caacaactcc aaacccgtgg aggacaagga tgctgtggcc ttcacctgtg 600
aacctgagac tcaggacgca acctacctgt ggtgggtaaa caatcagarc ctcccggtca 660
gtcccaggct gcagctgtcc aatggcaaca ggaccctcac tctattcaat gtcacaagaa 720
atgacacagc aagctacaaa tgtgaaaccc agaacccagt gagtgccagg cgcagtgatt 780
cagtcatcct gaatgtcctc tatggcccgg atgcccccac catttcccct ctaaacacat 840
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ggctgcactt gccaatgaca acangaccct nactctactc antggcacaa ggaatgatgt 1260
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<210> 291
<211> 2459
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1604)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1605)
<223> n equals a,t,g, or c

<220>
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<221> misc feature
<222> (2374)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2392)
<223> n equals a,t,g, or c

<400> 291
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agctcaagct ctctacaaag aggtggacag agaagacagc agagaccatg ggacccccct 120
cagcccctcc ctgcagattg catgtcccct ggaaggaggt cctgctcaca gcctcacttc 180
taaccttctg gaacccaccc accactgcca agctcactat tgaatccacg ccrttcaatg 240
tcgcagaggg gaaggaggtt cttctactcg cccacaacct gccccagaat cgtattggtt 300
acagctggta caaaggcgaa agagtggatg gcaacagtct aattgtagga tatgtaatag 360
gaactcaaca agctacccca gggcccgcat acagtggtcg agagacaata taccccaatg 420
yatccctgct gatccagaac gtcacccaga atgacacagg attctatacc ctacaagtca 480
taaagtcaga tcttgtgaat gaagaagcaa ccggacagtt ccatgtatac ccggagctgc 540
ccaagccctc catctccarc aacaactcca accccgtgga ggrcaaggat gctgtrgcct 600
tcacctgtga acctgaggtt cagaacacaa cctacctgtg gtgggtaaat ggtcagagcc 660
tcccggtcag tcccaggctg cagctgtcca atggcaacat gaccctcact ctactcagcg 720
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caaaggccaa ttaccgtcca ggggaaaatc tgaacctctc ctgccacgca gcctctaacc 900
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ccttcatcac cagcaacaac tccaaccccg tggaggatga ggatgctgta gccttaacct 1140
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tctccagcaa caactccaaa cccgtggagg acaaggatgc tgtggccttc acctgtgaac 1680
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gaccagagaa tcgagaacca tcctagccaa catngtgaaa accccatctg tnactaaaaa 2400
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<210> 292
<211> 570
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (567)
<223> n equals a,t,g, or c

<400> 292
aattcggcac gmgccggagt gtggtacttc tcctagttgc agtcaggctt catacgctat 60
tgtcctgccc gttagagcag ccagcgggta cagaatggat tttggaagag ggagtcacca 120
ctggacctcc aaggaagcca cgtgcagaca tctacaacct tcgatctcct gacgagttta 180
ttgttggcca aaaccaggct ttgattgaac caggatgaat gcgggtgttg gaagtagaat 240
atatatatac atataaaatt ggttgggagc cacgtgtacc agtgtgtgtt gatcttggct 300
tgattcagtc tgccttgtaa cagaaactgg cgatggaata tgagaggagc cctctggaaa 360
gaaaaggaca gaccctgtgc tttcatgaaa gtgaagatct ggctgaacca gttccacaag 420
gttactgtat acatagcctg agtttaaaag gctgtgccca cttcaagaat gtcattgtta 480
gactttgaaa tttctaactg cctacctgca taaagaaaat aaaatctttt aaatcaaaaa 540
aaaaaaaaaa raagggggcc gctctanagg                                  570

<210> 293
<211> 2468
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2076)
<223> n equals a,t,g, or c

<400> 293
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tattaatgag atcctggtca tgagggaaaa caagaaccca aacattgtga attacttgga 180
cagttacctc gtgggagatg agctgtgggt tgttatggaa tacttggctg gaggctcctt 240
gacagatgtg gtgacagaaa cttgcatgga tgaaggccaa attgcagctg tgtgccgtga 300
gtktctgcag gctctggagt tcttgcattc gaaccagata accccagagc agagcaaacg 360
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tgggcccaag gttgacatct ggtccctggg catcatggcc atcgaaatga ttgaagggga 480
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tctcgagatg gatgtggaga agagaggttc agctaaagag ctgctacagc atcaattcct 660
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aagagaactg caactgaatg actaatcaga tgatggccat ttctaaataa ggaatttcct 960
cccaattcat ggatatgagg gtggtttatg attaagggtt tatataaata aatgtttcta 1020
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taaaaaaa                                                          2468

<210> 294
<211> 1080
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1038)
<223> n equals a,t,g, or c

<400> 294
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atgacaacca aatcatcacc agctctgggg ataccacctg tgccctgtgg gacattgaga 120
caggccagca gacagtgggt tttgctggac acagtgggga tgtgatgtcc ctgtccctgg 180
cccccgatgg ccgcacgttt gtgtcaggcg cctgtgatgc ctctatcaag ctgtgggacg 240
tgcgggattc catgtgccga cagaccttca tcggccatga atccgacatc aatgcagtgg 300
ctttcttccc caacggctac gccttcacca ccggctctga cgacgccacg tgccgcctct 360
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ccgcgtgagc tgcctcgggg tcaccgacga tggcatggct gtggccacgg gctcctggga 600
ctccttcctc aagatctgga actaatggcc ccaccccac tgggcccagg ccaggagggg 660
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tccttctgct gccctggggt tggggcctca cccctctgga gggccggagg caggaggtgg 900
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tttttccata aaggagccaa ttccaactct gwaaaaaaaa aaaaaaaaaa acttcgrggg 1020
ggggcccgta cccaattngc ctttaggggg gggtttaaat taatggcggg gttttaaaag 1080

<210> 295
<211> 2695
<212> DNA
<213> Homo sapiens

<400> 295
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tccatatata cagaaattag acaaataata agtctttagt tcaacttaag catatctcaa 180
atgacttctc taaatttaaa gttgatcatg ataggatcat aaaagacaga aaagacttaa 240
gtaatcttgt aatgacaatt atttccattt ttgctgaact aaaaatattt aacttcataa 300
atatgttact acagcttcca gatttaaaga aaaaaagttt cccccactct caattaaaag 360
ttagaaccct ccacttttaa aattatacaa atatttcttt tttacattac acagaagcct 420
tctgtaccat tttacgaatt tctgtcttca taatataagt gaaaatactg tcatttcaat 480
tttctgcttt aaattgtttt taataagcat yccaaagtga tacagactta agcttttaat 540
caatcagtca ttcagttgat agacaaagtt agcgatgctt tatgctagga aacttgttga 600
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tgatgtttag gctttatttc tgttaataag gctttttacc attgattaaa tgaaggaatg 2520
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<210> 296
<211> 1394
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1238)
<223> n equals a,t,g, or c

<400> 296
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ggacaagttc attgaagact atctcttgcc agacacgtgt ttccgcatgc aaatcaacca 180
tgccattgac atcatctgtg ggttcctgaa ggaaaggtgc ttccgaggta gctcctaccc 240
tgtgtgtgtg tccaaggtgg taaagggtgg ctcctcaggc aagggcacca ccctcagagg 300
ccgatctgac gctgacctgg ttgtcttcct cagtcctctc accacttttc aggatcagtt 360
aaatcgccgg ggagagttca tccaggaaat taggagacag ctggaagcct gtcaaagaga 420
gagagcattt tccgtgaagt ttgaggtcca ggctccacgc tggggcaacc cccgtgcgct 480
cagcttcgta ctgagttcgc tccagctcgg ggagggggtk gagttcgatg tgctgcctgc 540
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ccaaatctat gtcaagctca tcgaggagtg caccgacctg cagaaagagg gcgagttctc 660
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gaattttcac atcccttgtc cagaattcat tcccctaaga gtaataataa ataatctcta 1380
acaccaaaaa aaaa 1394

<210> 297
<211> 998
<212> DNA
<213> Homo sapiens

<400> 297
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tggccgcatt gaaattcctc cgcragataa ttaaactcgg ggcctcatcc gggcaaaatt 120
acattccttg tgacgactgc gcatgctcgg aaaggggacg caatcragat cccaaacgcg 180

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gtacagacca aaccgcagtc cacgttacgg atcggcttac tccgcggagt tggcctcatt 240
tctgcagtcg gcgctccctg tagtttctcc tctcgaacgc caggtggagc aaccggccgg 300
ataccgccac agccctggca ggcggcgctg tgatgcctga gctgatcctc tctcctgcca 360
cagctcctca ccccctgaaa atgttcgcct gctccaagtt tgtctccact ccctccttgg 420
tcaagagcac ctcacagctg ctgagccgtc cgctatctgc agtggtgctg aaacgaccgg 480
agatactgac agatgagagc ctcagcagct tggcagtctc atgtcccctt acctcacttg 540
tctctagccg cagcttccaa accagcgcca tttcaaggga catcgacaca gcagccaagt 600
tcattggagc tggggctgcc acagttgggg tggctggttc tggggctggg attggaactg 660
tgtttgggag cctcatcatt ggttatgcca ggaacccttc tctgaagcaa cagctcttct 720
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cctttctcat cctctttgcc atgtgaagga gccgtctcca cctcccatag ttctcccgcg 840
tctggttggc cccgtgtgtt ccttttccta tacctcccca ggcagcctgg ggaacgtggt 900
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa                        998

<210> 298
<211> 1666
<212> DNA
<213> Homo sapiens

<400> 298
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ttaggtctcc aggaaagcta acagccaggg agaggatcag tctcttgctg gaccctggca 120
gctttkttga gagcgacatg tttgtggaac acagatgtgc agattttgga atggctgctg 180
ataagaataa gtttcctgga gacagcgtgg tcactggacg aggccgaatc aatggaagat 240
tggtttatgt cttcagtcag gattttacag tttttggagg cagtctgtca ggagcacatg 300
cccaaaagat ctgcaaaatc atggaccagg ccataacggt ggggctcca gtgattgggc 360
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cctatgatgt catgagctct aagcaccttt gtggtgatac caactatgcc tggcccaccg 1260
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tgcgagggtt tgtggatgac atcatccaac cttcttccac acgtgcccga atctgctgtg 1440
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cattgtaaac aaatcaaagg aaaagaaacc aagaactgaa ttactgtctg cccattcaca 1560
tcccattcct gccttttgca atcatgaaac ctgggaatcc aaatagttgg ataacttaga 1620
ataactaagt ttattaaatt ctagaaagat aaaaaaaaaa aaaaaa                1666

<210> 299
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<211> 2444
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<400> 299
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gagaaagttg atgtgattgc cggctcctcc aagatgaagg gcttctcgtc ctcagagtcg 120
gagagctcca gtgagtccag ctcctctgac agcgaagmcw ccgaaacagg tcctgcctaa 180
tcattggaca cggactctta ataaaacggt cttcagttcc agattccttc ccagcaagct 240
atagcttaag tccattttct tccgtgaaag ggacaggact ccatcaagtt atggaattcc 300
tcagagccct gggcctgtcc cccggggtgg attagtcatg tccagcagca cacgcctagt 360
cccgccttcg ggaaggctgc ctgcctggcc agccgcccag gnctctctgt gtaaagactg 420
cctggctgtc ctgcccagcc ttcctggttc tctggggtcc tctgggtggg tggcatctcc 480
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gcggaagaac actctgacct ctagagctgt cctagataag gagtgggagc tttagaggca 720
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ccctgtaagg ctcgagccac cgctgactct gagccttttg gagtctttcc tccttcgtct 840
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cctcacccca cccgcctcct ctagtggggt gagtctgggc tggtggacca gaggagggtg 1080
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ggtggaatca gtgttttaat cggattttta aaaaacattt tatttctttg tacaattacc 2340
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<210> 300
<211> 1026
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1026)
<223> n equals a,t,g, or c

<400> 300
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gtgctgccaa cgccccggtg gagaagctga ggtcatcatc agatttgaaa tatttaaagt 120
ggatacaaaa ctatttcagc aatgcagaca attaagtgtg ttgttgtggg cgatggtgct 180
gttggtaaaa catgtctcct gatatcctac acaacaaaca aatttccatc ggaatatgta 240
ccgactgttt ttgacaacta tgcagtcaca gttatgattg gtggagaacc atatactctt 300
ggacttttg atactgcagg gcaagaggat tatgacagat tacgaccgct gagttatcca 360
caaacagatg tatttctagt ctgtttttca gtggtctctc catcttcatt tgaaaacgtg 420
aaagaaaagt gggtgcctga gataactcac cactgtccaa agactccttt cttgcttgtt 480
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cagaagccta tcactccaga gactgctgaa aagctggccc gtgacctgaa ggctgtcaag 600
tatgtggagt gttctgcact tacacagaaa ggcctaaaga atgtatttga cgaagcaata 660
ttggctgccc tggagcctcc agaaccgaag aagagccgca ggtgtgtgct gctatgaaca 720
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tcaaactaaa gattaaaaat taaaattcgt tttgcaata atgacaaatg ccctgcacct 840
acccacatgc actcgtgtga gacaaggccc ataggtatgg cccccccctt ccccctccca 900
gtactagtta attttgagta attgtattgt cagaaaagtg attagtacta tttttttttg 960
ttgtttcaaa aaaaaaattt ttgtgtgtgt gttttttttt tttttttttt tttggggtt 1020
aaaaan 1026

<210> 301
<211> 830
<212> DNA
<213> Homo sapiens

<400> 301
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tgaraagatc ctgaagctca cggctgacgc caagtttgag tcaggcgatg tgaaggccac 120
agtggcagtg ctgagtttca tcctctccag tgcggccaag cacagtgtcg atggcgaatc 180
cttgtccagt gaactgcagc agctggggct gcccaaagag cacgcggcca gcctgtgccg 240
ctgttatgag gagaagcaaa gccccttgca gaagcacttg cgggtctgca gcctacgcat 300
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agcccagcct gttgccatgt ccctctcagc agacaagttc caggtcctcc tggcagaact 480
gaagcaggcc cagaccctga tgagctccct gggctgagga gaagggtgtt ccaggcctgt 540

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tggttctagg atgctgaggc cctggcccgg actctggcct cccagatccc cagctgcctc 660
acttctctct tgagaacttg gctcagggct cctgaggacc tttcccagca ttaccttccc 720
ttcccttgaa aggcaattgt tggctgtttt cataagcagg aaaaataaac agaagtataa 780
aggaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa            830

<210> 302
<211> 3300
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1158)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3232)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3280)
<223> n equals a,t,g, or c

<400> 302
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agcccactca agatggggaa gctattctgc cctcaggaat actcaagctc actgggcagc 3180
aagttaataa aggtagtgag agaaaacagg gcgtcttccg cttgttaggg gnaggtggaa 3240
ggatggagga gaaccacgaa catttattgg gccgctcccn atccacatta ttctgagtgc 3300

<210> 303
<211> 475
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (451)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (454)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (470)
<223> n equals a,t,g, or c

<400> 303
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tgccggcgtc ttggcgattc ggcccgacga gctccgcttt cgctacagca tggtggccta 120
ctggagacag gctggactca gctacatccg atactcccag atctgtgcaa aagcagtgag 180
agatgcactg aagacagaat tcaaagcaaa tgctgagaag acttctggca gcaacgtaaa 240
aattgtgaaa gtaaagaagg aataatctac cctgactaaa gcttgaaatg ctacatttcc 300
aaggtgaaga tgtgtgggca catgttatgg cagattgaaa aggatctcat tccatgggaa 360
aaaaaaaaat cctgtcttgt tcataaattg acaatgtcaa taaattgaaa tatggttcac 420
tgttaaaaaa aaaaaaaaaa aaangggggg nccnttttaa agaatccaan tttac 475

<210> 304
<211> 2902
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2888)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2891)
<223> n equals a,t,g, or c

<400> 304
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gaaggatctg ttaagctcac tgactttggt ttctgtgccc agatcacccc tgagcagagc 120
aaacgcagta ccatggtcgg aacgccatac tggatggcac cagagktggt tacacggaaa 180
gcttatggcc ctaaagtcga catatggtct ctgggtatca tggctattga gatggtagaa 240
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<213> Homo sapiens

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<210> 306
<211> 1987
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (731)
<223> n equals a,t,g, or c

<400> 306
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<211> 785
<212> DNA
<213> Homo sapiens

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<210> 308
<211> 2178
<212> DNA
<213> Homo sapiens

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<211> 875
<212> DNA
<213> Homo sapiens

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<211> 756
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>
<221> misc feature
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<223> n equals a,t,g, or c

<220>
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<222> (756)
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<210> 311
<211> 851
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (834)
<223> n equals a,t,g, or c

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<210> 312
<211> 1335
<212> DNA
<213> Homo sapiens

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<210> 313
<211> 516
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (505)
<223> n equals a,t,g, or c

<400> 313
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<210> 314
<211> 1833
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<222> (1766)
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<220>
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<222> (1792)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1806)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1827)
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<400> 314

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<210> 315
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<212> DNA
<213> Homo sapiens

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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 1354

<210> 316
<211> 2421
<212> DNA
<213> Homo sapiens

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tataaagtga gagaaattat tcagaaactc atgctggatg gtgacaggaa taaagatggg 300
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gttgtgaaca ttggtgcaga agatttgagg gctgggaaac ctcatctggt tttgggactg 780
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<211> 1092
<212> DNA
<213> Homo sapiens

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aaaaaaaaac gtttctcact gtcttaaata gaatttttaa atagtatata ttcagtggca 120
ttttggagaa caaagtgaat ttacttcgac ttcttaaatt tttgtaaaag actataagtt 180
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ttgatagaag tcacactagt atataccatt taatacattt acactttctt atttaagaag 300
atattgaatg caaaataatt gacatataga actttacaaa catatgtcca aggactctaa 360
attgagactc ttccacatgt acaatctcat catcctgaag cctataatga agaaaaagat 420
ctagaaactg agttgtggag ctgactctaa tcaaatgtga tgattggaat tagaccattt 480
ggcctttgaa ctttcatagg aaaaatgacc caacatttct tagcatgagc tacctcatct 540
ctagaagctg ggatggactt actattcttg tttatatttt agatactgaa aggtgctatg 600
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catttgttgg ctctatttta atttttttct tttaaaataa acagctggga ccatcccaaa 960
agacaagcca tgcatacaac tttggtcatg tatctctgca aagcatcaaa ttaaatgcac 1020
gcttttgtca tgtcaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1080
aaaaaaaaaa ac 1092

<210> 318
<211> 1380
<212> DNA
<213> Homo sapiens

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tataagtttc cagttgtcat cacaagaagc agtaatgttt atggaccaca tcaatatcca 180
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tcagttgtcc agcttgccaa agaactaata caactgatca aagagaccaa ttcagagtct 420
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tcttttggaa ttagattcat gactttctgt ataaaattca aatgcagaat gcctcaatct 780
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<211> 2612
<212> DNA
<213> Homo sapiens

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ccaaagacct acatccggca ggacaatgag agggtactgt ttgcccccat gcgcatggtg 240
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gttctggatt tggtggacgc cgtcatcctt acggaaaaga cagccctgca cctccgggct 780
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<210> 320
<211> 943
<212> DNA
<213> Homo sapiens

<220>
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<222> (52)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (54)
<223> n equals a,t,g, or c

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<212> DNA
<213> Homo sapiens

<220>
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<222> (2948)
<223> n equals a,t,g, or c

<220>
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<221> misc feature
<222> (2956)
<223> n equals a,t,g, or c

<400> 321
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caatttttgc agttactgaa gaatttcagc ctgtttacaa ggagctgaaa aacttgatcc 360
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gaggaaanaa aaaaanaaa 2959

<210> 322
<211> 802
<212> DNA
<213> Homo sapiens

<400> 322
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gtggtgctcg gcgacggcgt gcagctcccg cccggggact acagcacgac ccccggcggc 180
acgctcttca gcaccacccc gggaggtacc aggatcatct atgaccggaa attcctgatg 240
gagtgtcgga actcacctgt gaccaaaaca cccccaaggg atctgcccac cattccgggg 300
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agcccagaag ataagcgggc gggcggtgaa gagtcacagt ttgagatgga catttaaagc 420
accagccatc gtgtggagca ctaccaaggg gcccctcagg gccttcctgg gaggagtccc 480
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cacaccctcg cwgcyggggg sgcaaccacc ccttccttag gttgatgtgc ttgggaaagc 720
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aaaaaaaaaa aaaaaaaaaa aa 802

<210> 323
<211> 1724
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1590)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1650)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1701)
<223> n equals a,t,g, or c

<400> 323
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cgcgtgccgc agaaagatct cagagtaaag aagaacttaa agaaattcag atatgtgaag 180
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aattttgcaa acacgaggct gcagtcagtt cgggaaggct gtaggacccg cagccagtgc 300
aggcactctg gacctctcag ggtggcgatg aagtttccag cgcggagtac caggggagca 360
accaacaaaa aagcagagtc ccgccagccc tcagagaatt ctgtgactga ttccaactcc 420
gattcagaag atgaaagtgg aatgaatttt ttggagaaaa gggctttaaa tataaagcaa 480
aacaaagcaa tgcttgcaaa actcatgtct gaattagaaa gcttccctgg ctcgttccgt 540
ggaagacatc ccctcccagg ctccgactca caatcaagga gaccgcgaag gcgtacattc 600
ccgggtgttg cttccaggag aaaccctgaa cggagagctc gtcctcttac caggtcaagg 660
tcccggatcc tcgggtccct tgacgctcta cccatggagg aggaggagga agaggataag 720
tacatgttgg tgagaaagag gaagaccgtg gatggctaca tgaatgaaga tgacctgccc 780
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gccctyataa aacctaagca cttggaaacn caataatagt attaactaac tagatctatt 1620
gaatttcaga gaagagccta aatagcaaan tttacacaaa aacgagtatg atttagcact 1680
catactagtt gagggtttgg ngccgatagc gactgctaat gaac 1724

<210> 324
<211> 2261
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1098)
<223> n equals a,t,g, or c

<400> 324
cccagatggt aggccaacag gggacgcttt tgtcctcttt gcctgtgagg aatatgcaca 60
gaatgcgttg aggaagcata aagacttgtt gggtaaaaga tacattgaac tcttcaggag 120
cacagcagct gaagttcagc aggtgctgaa tcgattctcc tcggcccctc tcattccact 180
tccaacccct cccattattc cagtactacc tcagcaattt gtgcccccta caaatgttag 240
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cctgggggag ttcgccacag atattcgtac tcatggggtt cacatggttt tgaatcacca 360
gggccgccca tcaggagatg cctttatcca gatgaagtct gcggacagag catttatggc 420
tgcacagaag tgtcataaaa aaaacatgaa ggacagatat gttgaagtct ttcagtgttc 480
agctgaggag atgaactttg tgttaatggg gggcacttta aatcgaaatg gcttatcccc 540
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araarctgcc atttaccagc cctctgtgat tttgaatcca cgagcactgc agccctycac 660
agcgtactac ccagcaggca ctcagctctt catgaactac acagcgtact atcccagtgt 720
ttgaaagatg tatggtgatc ttgaaacctc cagacacaag aaaacttcta gcaaattcag 780
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gttaacattt gataataaaa cttgcctgtt taatctcaaa a 2261

<210> 325
<211> 1213
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1213)
<223> n equals a,t,g, or c

<400> 325
tggacgcgtg ggtcgaccca cgcgtccggt caaaaytaac cccctaataa aattaattaa 60
ccactcattc atcgacctcc ccaccccatc caacatctcc gcatgatgaa acttcggctc 120
actccttggc gcctgcctga tcctccaaat caccacagga ctattcctag ccatgcacta 180
ctcaccagac gcctcaaccg ccttttcatc aatcgcccac atcactcgag acgtaaatta 240
tggctgaatc atccgctacc ttcacgccaa tggcgcctca atattcttta tctgcctctt 300
cctacacatc gggcgaggcc tatattacgg atcatttctc tactcagaaa cctgaaacat 360
cggcattatc ctcctgcttg caactatagc aacagccttc ataggctatg tcctcccgtg 420
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cattgggaca gacctagttc aatgaatctg aggaggctac tcagtagaca gtcccaccct 540
cacacgattc tttacctttc acttcatctt gcccttcatt attgcagccc tagcagcact 600
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cgataaaatc accttccacc cttactacac aatcaaagac gccctcggct tacttctctt 720
ccttctctcc ttaatgacat taacactatt ctcaccagac ctcctaggcg acccagacaa 780
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cgtactatac ttcacaacaa tcctaatcct aataccaact atctccctaa tkgaaaacaa 1140
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ttcccccccta ggn 1213

<210> 326
<211> 2764
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (372)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2128)
<223> n equals a,t,g, or c

<400> 326
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tggacagtca ggctgggcag atccgggctc aggccgtkca rgartcagaa cgcctggccc 120
gggacaagaa tgcctcctta cagctgctgc aaaaggagaa ggagaagctg actgtgctgg 180
aaaggagata ccactcactc acagggggca ggcctttccc gaagaccaca tcgaccctca 240
aagaggttta ccgctccaag atggatggcg aggccaccag ccccccttccc cggacccgca 300
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ccaggctggg ggttttcagt atttgtaagc atttcagcag aacaataaag cctttggact 2700
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gggc 2764

<210> 327
<211> 1764
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1398)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1758)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1759)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1762)
<223> n equals a,t,g, or c

<400> 327
ggacatcaaa gatgaggagc ctggagactt tgggccgacc gaagcctgaa tgtgagggtt 60
acgaccccaa cgccctgtat tgcatttgcc gccagcctca caacaacagg tttatgattt 120
gctgtgaccg ctgtgaagaa tggtttcatg gcgattgtgt gggcatttct gaggctcgag 180
ggaggctttt ggaaaggaat ggggaagact atatctgccc aaactgcacc attctgcaag 240
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atgctgatgg caccgattgt acaagtatag gaacaataga gcagaagtct agcgaagacc 360
aagggataaa gggtagaatt gagaaagctg caaatccaag tggcaagaag aaactcaaga 420
tcttccagcc tgtgatagag gcgcctggtg cctcaaaatg tattggcccc gggtgctgtc 480
acgtggcgca cccgactcgg tgtactgcag taatgactgt atcctcaaac acgccgcagc 540
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gatgaagcca gagaagccca gtcttccgaa atgcggtgct caggcaggta ttaaatctc 660
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<210> 328
<211> 571
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (535)
<223> n equals a,t,g, or c

<400> 328
gcccaantac tttccagccc agtaaggggt atttcaggag agcagtccac tkaaggttct 60
ttccctttaa gatatgtgca ggatcaagtt gcggcacctt ttcagctgag taaccacact 120
ggccgcatca aggtggtctt tactccgagc atctgtaaag tgacctgcac caagggcagc 180
tgtcagaaca gctgtgagaa ggggaacacc accactctca ttagtgagaa tggtcatgct 240
gccgacaccc tgacggccac gaacttccga gtggtaattt gccatcttcc atgtatgaat 300
ggtggccagt gcagttcaag ggacaaatgt cagtgccctc caaatttcac aggaaaactt 360
tgtcagatcc cagtccatgg tgccagcgtg cstaaacttt atcagcattc ccagcagcca 420
ggcaaggcat tggggacgca tgtcatccat tcaacacata ccttgcctct gaccgtgact 480
agccagcagg agtcaaagtg aaatttcctc cttaacatag tcaatatcca tgtgnaacat 540

cctcctgaag cttccgtcca gatacatcag g 571

<210> 329
<211> 473
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (37)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (467)
<223> n equals a,t,g, or c

<400> 329
cacgtagtaa tctttaaata taaatagcca cgtgtgnact actatcatat gggacagaac 60
agttccagac cacattattg ataagatgtg ttaaaataaa taagatcttt ctgtgaactt 120
ttgggaacca aatggttttg ggcatgattt cccagctcat tatatattga cacagaattt 180
tttcagaatg gcatttacta gtaccccaga aatttagcaa agtatagtta ggtacttatt 240
gtaaaatata ttgcatattt gatttaaggt ttgttatgaa cacactaatc tgatatttta 300
tatttaaacc attttcaatk ctgtaagact cagtaagagc tatttaatta tactgwaaca 360
aagaaaatct ataaataaat agcacaaata ggcacatgcg ggtgtataat actgaagtgg 420
tagtttttaa tttccgaaga gaataagcnt ttcaggccca ttagaancac aga 473

<210> 330
<211> 1335
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (865)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1004)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1156)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1301)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1328)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1333)
<223> n equals a,t,g, or c

<400> 330
ggcgctactg aggccgcgga ccggactgcg gttggggcgg gaagagccgg ggccgtggct 60
gacatggagc agccctgctg ctgaggccgc gccctccccg ccctgaggtg ggggcccacc 120
aggatgagca agctgcccag ggagctgacc cgagacttgg agcgcagctg cctgccgtgg 180
cctccctggg ctcctcactg tcccacagcc agagcctctc ctcgcacctc cttccgccgc 240
ctgagaagcg aagggccatc tctgatgtcc gccgcacctt ctgtctcttc gtcaccttcg 300
acctgctctt catctccctg ctctggatca tcgaactgaa taccaacaca ggcatccgta 360
agaacttgga gcaggagatc atccagtaca actttaaaac ttccttcttc gacatctttg 420
tcctggcctt cttccgcttc tctggactgc tcctaggcta tgcgtgctgc rgctccggca 480
ctggtgggtg attgcggtca cgacgctggt gtccagtgca ttcctcattg tcaaggtcat 540
cctctctgag ctgctcagca aaggggcatt tggctacctg ctccccatcg tctcttttgt 600
cctcgcctgg ttggagacct ggttccttga cttcaaagtc ctaccccagg aagctgaaga 660
ggagcgatgg tatcttgccg cccaggttgc tgttgcccgt ggacccctgc tgttctccgg 720
tgstctgtcc gagggacatt ctattcaccc ccagaatcct ttgcagggtc tgacaatgaa 780
tcagatgaag aagttgctgg gaagaaaagt ttctctgctc aggagcggga gtacatccgc 840
caggggaagg aggccacggc agtgntggac cagatcttgg cccaggaaga gaactggaag 900
tttgagaaga ataatgaata tggggacacc gtgtacacca ttgaagttcc ctttcacggc 960
aagacgttta tcctgaagac cttcctgccc tgtcctgcgg astncgtgta ccaggaggtg 1020
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cgtkgtcttc cccaanggac ttcgtgaatg tccggcgcat tgarcggcgc agggaccgat 1200
acttgttcat cagggatcgc caccttcaca cagtgccaag cccccgacgc acaaatatgt 1260
tccggggaga gaatggcctg gggtttcat cgtggttcaa ntcggccatt aaccccctgt 1320
tttgcacntt gtntg 1335

<210> 331
<211> 1046
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (982)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (997)
<223> n equals a,t,g, or c

<400> 331
ggtaaaacag agagcaacat gccccagtcc ctctctctgg ccagttcttg tggcagcccc 60
attggcctgg agacatggtt ttttgtggtt gcagctgcag ctgtcccccc gtcttttaac 120
tcgacatcaa aagcctctct cctgccagtg ccataggttt gttagagcta ctgttttgta 180
acagctgctc aggtgtcccc aaactcctgg agttttccac cctgagctgt taaaaacctg 240
ccctgcctgt cacccatttc tgtgccacca gcccaccccc tgcctccact ctcctccctg 300
ccaccttctg tccctgccat aggaatatgg ggacaccgtg tacaccattg aagttccctt 360
tcacggcaag acgtttatcc tgaagacctt cctgccctgt cctgcggagc tcgtgtacca 420
ggaggtgatc ctgcagcccg agaggatggt gctgtggaac aagacagtga ctgcctgcca 480
gatcctgcag cgagtggaag acaacaccct catctcctat gacgtgtctg caggggctgc 540
gggcggcgtg gtctccccaa gggacttcgt gaatgtccgg cgcattgagc ggcgcaggga 600
ccgatacttg tcatcaggga tcgccacctc acacagtgcc aagcccccga cgcacaaata 660
tgtccgggga gagaatggcc ctgggggctt catcgtgctc aagtcggcca gtaacccccg 720
tgtttgcacc tttgtctgga ttcttaatac agatctcaag ggccgcctgc cccggtacct 780
catccaccag agcctcgcgg ccaccatgtt tgaatttgcc tttcacctgc gacascgcat 840
cagcgagctg gggggcccggg cgtgactgtg ccccctccca ccctgcgggc cagggtcctg 900
tcgccaccac ttccagagcc agaaagggtg ccagttgggc tcgcactgcc cacatgggac 960
ctggccccag gcwgtmamcc tncamcgagc cacgcantcc tgggagttga tgaytgaaca 1020
gstttgggtg gacattggat tcgggg 1046

<210> 332
<211> 1311
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1280)
<223> n equals a,t,g, or c

<400> 332
ggcggcacca gcggcggcgc tctgtgtgga gaagcagggg cwgctgctgc cgctgctgct 60
gcacgaatcg ccgcagcccc cagccttgcg cgtcgtcgct acctcctcgg acaggtgaga 120
agcagcccag aaattttatg aataagcatc agaagccagt gctaacaggc cagcggttca 180
aaactcggaa aagggatgaa aaagagaaat tcgaacccac agtcttcagg gatacacttg 240
tccaggggct taatgaggct ggtgatgacc ttgaagctgt agccaaattt ctggactcta 300
caggctcaag attagattat cgtcgctatg cagacacact cttcgatatc ctggtggctg 360
gcagtatgct tgcccctgga ggaacgcgca tagatgatgg tgacaagacc aagatgacca 420
accactgtgt gttttcagca aatgaagatc atgaaaccat ccgaaactat gctcaggtct 480
tcaataaact catcaggaga tataagtatt tggagaaggc atttgaagat gaaatgaaaa 540
agcttctcct cttccttaaa gccttttccg aaacagagca gacaaagttg gcgatgctgt 600
cggggattct gctgggcaat ggcaccctgc ccgccaccat cctcaccagt ctcttcaccg 660
acagcttagt caaagaaggc attgcggcct catttgctgt caagcttttc aaagcatgga 720
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ggctgcttga actctttcca gttaacagac agagtgtgga tcattttgct aaatacttca 840
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ggaaggaact gcagaaggag ctccaggagc gtctttctca ggaatgcccg atcaaggagg 960
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cagagcaggc tctgaagcac ctgaagcaat atgctcccct gctggccgtg ttcagctccc 1140
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atttcatgaa agcctttcag aagattgtgc ttccttatac catttcagta ttgcttcttc 1260
gctcagaaca tcagctttan tcgtgccgat tcggcacgag cggcacgagc c 1311

<210> 333
<211> 1444
<212> DNA
<213> Homo sapiens

<400> 333
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tgtccttggg gctgtaattg gccccagctg agcagggcaa acactgaggt caactacaag 120
ccacaggccc cttccccagc ctcagttcac agctgccctg ttgcagggag gcggtggccc 180
ttctgttgct agaccgagcc tgtgggatat accaaggcag aggagcccat agccatgagg 240
agcctcgggg ccctgctctt gctgctgagc gcctgcctgg cggtgagcgc tggccctgtg 300
ccaacgccgc ccgacaacat ccaagtgcag gaaaacttca atatctctcg gatctatggg 360
aagtggtaca acctggccat cggttccacc tgcccctggc tgaagaagat catggacagg 420
atgacagtga gcacgctggt gctgggagag ggcgctacag aggcggagat cagcatgacc 480
agcactcgtt ggcggaaagg tgtctgtgag gagacgtctg gagcttatga gaaaacagat 540
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gtccacacca actatgatga gtatgccatt ttcctgacca agaaattcag ccgccatcat 660
ggacccacca ttactgccaa gctctacggg cgggcgccgc agctgaggga aactctcctg 720
caggacttca gagtggttgc ccagggtgtg ggcatccctg aggactccat cttcaccatg 780
gctgaccgag gtgaatgtgt ccctggggag caggaaccag agcccatctt aatcccgaga 840
gtccggaggg ctgtgctacc ccaagaagag gaaggatcag gggtgggca actggtaact 900
gaagtcacca agaaagaaga ttcctgccag ctgggctact cggccggtcc ctgcatggga 960
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aacggaaca agttctactc agagaaggag tgcagagagt actgcggtgt ccctggtgat 1260
ggtgatgagg agctgctgcg cttctccaac tgacaactgg ccggtctgca agtcagagga 1320
tggccagtgt ctgtcccggg gtcctgtggc aggcagcgcc aagcaacctg ggtccaaata 1380
aaaactaaat tgtaaactcc tgaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1440
aagg 1444

<210> 334
<211> 1030
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (59)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (989)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1006)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1023)
<223> n equals a,t,g, or c

<400> 334
tagaattcgg agaagctgaa gcttagtgtt ctaaacggtg gttgggaagg gggaaggang 60
acctcatgga cgtgcctggg ggtgtggctt ggcttccctt gattttggcc ggtggatgac 120
gctgtcctga ccacacccac tccttgctgc agccrtgkag tcttccactt tcgccttggt 180
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tcccccaacc ttccccaacc ccacctgacc tggaagctat ggcctccctc ctcaagaagg 600
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acgaggccgg gcaggaggaa gtggggatgc cgcctctgcc cccgccacag cagccccctc 840
ctccttctcc acctcaacct tctcgcctgg gcccccctacc cacatcctgc caccacccga 900
ggggaccgca agcaaaagaa gagagaccag aacaagtcgg cggytytgag gtaccgccag 960
cggaaggggg caggaggggt tgagggcynk gggaagggga agttgncagg gggttgggaa 1020
ggnaagggaa 1030

<210> 335
<211> 2127
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (72)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2098)
<223> n equals a,t,g, or c

<220>
<221> misc feature

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<222> (2114)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2117)
<223> n equals a,t,g, or c

<400> 335
ggatctgagg aaagggaggg cttttctgat ctctcccaat tagaggatta ggcaattggc 60
agcgcagtgc gntaactctg ggcggggctg ggctccaggg ctggacagca cagtccctct 120
gaactgcaca gagacctcgc agccccgaga actgtcgccc ttccacgatg tggctccgtg 180
cctttatcct ggccactctc tctgcttccg cggcttgggc agggcatccg tcctcgccac 240
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ggtggtgggg ggcaggggac agaggccatg aaggagcaag ttttgtattt gtgacctcag 2040
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gttcccaatt tacnaanggg tgcttgg                                     2127

<210> 336
<211> 847
<212> DNA
<213> Homo sapiens
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<220>
<221> misc feature
<222> (291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (829)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (847)
<223> n equals a,t,g, or c

<400> 336
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tccccactcc tttcctcacg ccaagctctg actttccgtg ctccacgatc ccgcggctcc 180
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gacaaccgca gccacagcgc ccacttcttt gagtttctca ccaaggagct agccctgggc 540
caggaccgga tacttatccg ctttttcccc ttggagtcct ggcagattgg caagataggg 600
acggtcatga ctttttatg attgggcacg gagggatcca gggcatctgt gaactggctg 660
cttcttccag agagatctct tggcagagtg agggcctgga gataaccagc tttggattat 720
cccgcatgca acattcctgt gatcacataa tcctcttctt catcctcata tgaaataaat 780
gaagagagct tcctcattca aaaaaaaaaa aaaaaaaccc cgggggggnc cggtaaccca 840
ttggccn 847

<210> 337
<211> 702
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (150)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (669)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (679)
<223> n equals a,t,g, or c

<400> 337
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ccgcctcttc cgctgcgtgc cggaccatgg cgcaggggca gcgcaagttt caggcgcaca 120
aacccgcaaa gagtaagacg gcagcggcan cctctgaaaa gaatcggggc ccaagaaaag 180
gcggtcgtgt tatcgctccc argaaggcgc gcgtcgtgca gcagcaaaag ctcaagaaga 240
acctagaagt cggaatccgg aagaagatcg aacatgacgt ggtgatgaaa gccagcagca 300
gcctgcccaa gaagctggca ctgctgaagg ccccagccaa gaagaaaggg gcagctgccg 360
ccacctcctc caagacacct tcctgaggac gctggcccca gtgcaggcca acatccccacc 420
ccctacctcc atatgggacc ttgcaagtca tcccacaggc tgcactgtca ggaagaggac 480
cctgtccccc agcactgggc ttcacctaga acttcagtgg gggccaaggg tgctgagaac 540
ccagcaatga ccaggaagat acagtcacta acttcatctg tccccgtgcc ccttcccagg 600
tcctgcctcc acaggtttaa cccagaacaa taaacctggc tttgtcaama aaaaaaaaaa 660
agggccggnc gttttagang atccagctta cgtaccgtgc tt 702

<210> 338
<211> 875
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (791)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (813)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (830)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (861)
<223> n equals a,t,g, or c

<400> 338

taagatagca aaccagttcg ttttaagtaa gctaacttgt tcattagtat ctgtggctta 60
aaatggcaaa aaagaaaata tccttgagtt tgtaatctag ttacagaagt aaggcataca 120
cacacacaaa gataacagta cctagagaga gagtgtgtgt gagtgtgcgt gtctctgtgt 180
gtgcacgtgc acgctcatgg ccaaatgtgc gcactctaca taaaggaggc aggagttcct 240
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ttccgcaaca cagaaatgac tcagaatctc agacaaaatg tattatttgt tcaattttaa 360
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tggcaccata ttttacaagt ttttttcctc ttctcacagt gatcttgtga gttagttact 540
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acccatctca ccacactgct ttacagtctt cctgaaggga cattttgagg tggggggggg 720
ccttcaaagc tcagaggact gggtttkgaa tgggtttaat ttttgcaagg gatccatgtc 780
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<210> 339
<211> 1448
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1427)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1432)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1440)
<223> n equals a,t,g, or c

<400> 339
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<210> 340
<211> 843
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (812)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (822)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (829)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (838)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (841)
<223> n equals a,t,g, or c

<400> 340
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gccccaggcc cggatcagct gcccagaagg caccaatgcc tatcgctcct actgctacta 240
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aagcagtgtt aatcctggct actgtgtgag cctgacctca agcacaggat tccagaaatg 540
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gaccatctct ccaactcaac tcaacctgga cactctcttc tctgctgagt ttgccttgtt 720
aatcttcaat agttttacct accccagtct ttggaaccyt aaataataaa aataaacatg 780
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naa 843

<210> 341
<211> 1293
<212> DNA
<213> Homo sapiens

<400> 341
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<210> 342
<211> 1273
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (483)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1247)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1262)
<223> n equals a,t,g, or c

<400> 342
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cgacgcgcag ctgcaggctg agaagcagaa ggccagggaa gaagaggagc aaaaagaagg 180
tggagatggg gctgcaggtg accccaaaaa ggagaagaaa tctctagact cagatgagag 240
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<210> 343
<211> 1793
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1251)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1267)
<223> n equals a,t,g, or c

<400> 343

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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa 1793

<210> 344
<211> 1672
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (95)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1667)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1668)
<223> n equals a,t,g, or c

<400> 344
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aagtctaagc gccggaagtg gtgggcattc tgggtaacga gctatttact tcctgcgggt 180
gcacaggctg tggtcgtcta tctccctgtt gttcttccca tcggcgaaga tggccctgga 240
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tatagaccag tttgaatatg atggttgtga caattgtgat gcatatctac aaatgaaggg 360
taaccgagag atggtatatg actgcactag ctcttccttt gatggaatca ttgcgatgat 420
gagtccagag gacagctggg tctccaagtg gcagcgagtc agtaacttta agccaggtgt 480
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<210> 345
<211> 2109
<212> DNA
<213> Homo sapiens

<400> 345
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<210> 346
<211> 1714
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

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aaagttccaa gaacccagag gaggcagaac tagaagacac actcaatcaa gtgatggttg 1560
tcttcaagta catagaagac aaagacgtat ttcagaagtt ctatgcgaag atgctcgcca 1620
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<210> 347
<211> 1672
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1667)
<223> n equals a,t,g, or c

<400> 347
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aaaataagct ggtactagtt aaacaattgg atatcttggc tgctgyacat gatgtgctta 180
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agtcaattct tgaaaatgtg gatacaccag aattgctttg caaatgtgtt aagtgcattc 480
ttttggtggc tcgatgttac cctcatattt tcagcrctaa ttttagggat acagttgata 540
tattagttgg atggcataga gatcatactc agaaaccttc gctcacgcag caggtatctg 600
ggtggttgca gagtttggag ccattttggg tagctgatct tgcatttcct acgactcttc 660
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cttttctcat tacatattta tgtatttcac tgtcatgtca acatgtctgc agaatcactg 1560
tatgtaacaa acagccatat ttaagacatg cctggataaa taaaattggt aggaatgttt 1620
tcttgccatt ataaaaaaaa aaaaaaaaaa aaaaaaaagg ggggccnccc tt         1672
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<210> 348
<211> 1483
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<400> 348
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ttccctagaa ccccagccag gtccgtggtg gccctgaaga cccccatcaa ggtggagctg 180
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acccgcatgg tggcactctg tacctgcaag gccactcaga ggcccccgta ctgcgatggc 360
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tgctgtccag ccacaggtgg ccttggctcc aggcctctga caggcacccc cttctgtggg 480
aaaggaaaca ggtgctgagc ccaagagact ctggtaccca ctgctggctc atgaaggaag 540
aattattcct tataacctaa aagtctccag tctggggcag gcgggagtgg gccctggttc 600
aatgtttgct gatggggaag atggcaaaaa caagcctgcc caaccagact ggtagtcctg 660
cagtcactgc tatgaggccc atgtgctgcc tcctgctcca gattttaacc tctctgtggg 720
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cttcacaatg ctaaagcctt agccctcctc caagagctga gacctctcag ggcctgaatc 1440
ttcttttcca caagataaat gatgcaaagg ccacacacac agg 1483

<210> 349
<211> 1842
<212> DNA
<213> Homo sapiens

<400> 349
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tattctttag tggaggctgg atgtgcatta gcctggatcc tcagttctca aatgtgtgtg 180
gcagccagga tgactagatc ctgggtttcc atccttgaga ttctgaagta tgaagtctga 240
gggaaaccag agtctgtatt tttctaaact ccctggctgt tctgatcggc cagttttcgg 300
aaacactgac ttaggtttca ggaagttgcc atgggaaaca aataatttga actttggaac 360
agggttggaa ttcaaccacg caggaagcct actatttaaa tccttggctt caggttagtg 420

acatttaatg ccatctagct agcaattgcg accttaattt aactttccag tcttagctga 480
ggctgagaaa gctaaagttt ggttttgaca ggttttccaa aagtaaagat gctacttccc 540
actgtatggg ggagattgaa ctttccccgt ctcccgtctt ctgcctccca ctccataccc 600
cgccaaggaa aggcatgtac aaaaattatg caattcagtg ttccaagtct ctgtgtaacc 660
agctcagtgt tttggtggaa aaaacatttt aagttttact gataatttga ggttagatgg 720
gaggatgaat tgtcacatct atccacactg tcaaacaggt tggtgtgggt tcattggcat 780
tctttgcaat actgcttaat tgctgatacc atatgaatga aacatgggct gtgattactg 840
caatcactgt gctatcggca gatgatgctt tggaagatgc agaagcaata ataaagtact 900
tgactaccta ctggtgtaat ctcaatgcaa gccccaactt tcttatccaa ctttttcata 960
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atttcaataa atgatatata atttaaagtt aaaaaaaaaa ga 1842

<210> 350
<211> 3008
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (59)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (65)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1307)
<223> n equals a,t,g, or c

<400> 350

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gaaaagttca acttgagaga caaaatgcag tggacctccc tcctgctgct ggcagggctc 180
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gacaatcgca acctcaagta cctgcccttc gttccctccc gcatgaagta tgtgtacttc 480
cagaacaacc agatcacctc catccaggaa ggcgtctttg acaatgccac agggctgctc 540
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aagctgaggc acctggagag gctgtacctg gaccacaaca acctgacccg gatgcccggt 660
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aacaatgctc tggagggggct ggagaacctc acggccttgt acctccaaca caatgagatc 780
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<210> 351
<211> 2756
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1597)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2540)
<223> n equals a,t,g, or c

<400> 351
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gctgccccg cgggcgcgct ccctgaagtc ctttgtggtc acctcagtgg tggctttccc 180
cacggactcc aaaacagtac agaggaccca ggacaacagc tgcagctttg gcctgcacgc 240
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<210> 352
<211> 1645
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (97)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1574)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1596)
<223> n equals a,t,g, or c

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atataagcct aagtttttat tcataagttt tattgaagtt ctgatcggtc cccttcagaa 180
atttttttat attattcttc aagttacttt cttatttata ttgtatgtgc attttatcca 240
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agtaaagtac tgtatttgtt catgaagatg actgagatgg taacacttcg tgtagcttaa 600
ggaaatgggc agaatttcgt aaatgctgtt gtgcagatgt gttttccctg aatgctttcg 660
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atgtaatata attgagatga aatgttctct ggttggaaca gatactctct tttttttctt 1200
gcaatcttta agaatacata gatctaaaat tcattagctt gacccctcaa agtaactttt 1260
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<210> 353
<211> 1637
<212> DNA
<213> Homo sapiens

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<222> (738)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (771)
<223> n equals a,t,g, or c

<400> 353
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gttctccggt cccgccgctc ccgcagcagc catgtcgttc ttcccggagc tttactttaa 120
cgtggacaat ggctacttgg agggactggt gcgcggcctg aaggccgggg tgctcagcca 180
ggccgactac ctcaacctgg tgcagtgcga gacgctagag gacttgaaac tgcatctgca 240
gagcactgat tatggtaact tcctggccaa cgaggcatca cctctgacgg tgtcagtcat 300
cgatgaccgg ctcaaggaga agatggtggt ggagttccgc cacatgagga accatgccta 360
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cctgctcatc acaggcacgc tgcaccagcg ctccatcgct gagctcgtgc ccaagtgcca 480
cccactaggc agcttcgagc agatggaggc cgtgaacatt gctcagacac ctgctgagct 540
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gcaggacctt gacgagatga acatcgagat catccgcaac accctctaca aggcctacct 660
ggagtccttc tacaagttct gcaccctact gggcgggact acggctgatg ccatgtgccc 720
catcctggag tttscaangc agaccgtgcc aagctctttc cacactgtgg ncggctctac 780
cctgagggcc tggcgcastg gctcgggctg acgactatga acaggtcaag aacgtggccg 840
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agagtgtgtg tgtccttggg gcctgggggg atgttgctcc tcagctccct ccctcagccc 1560
tgcccctctg agacaataaa actgccctct ctaaggccaa aaaaaaaaaa aaaaaaaaaa 1620
aaaaaaaaaa aaaaaaa 1637

<210> 354
<211> 1119
<212> DNA
<213> Homo sapiens

<400> 354
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ccctgcgggg agtcggcccc cgaccttgcc ggcttcaccc tcctaatgcc agcagtatct 180
gttggaaatg ttggccagct tgcaatggat ctgattattt ctacactgaa tatgtctaag 240
attggttact tctataccga ttgtcttgtg ccaatggttg gaaacaatcc atatgcgacc 300
acagaaggaa attcaacaga acttagcata aatgctgaag tgtattcatt gccttcaaga 360
aagctggtgg ctctacagtt aagatccatt tttattaagt ataaatcaaa gccattctgt 420
gaaaaactgc tttcctgggt gaaaagcagt ggctgtgcca gagtcattgt tctttcragc 480
agtcattcat atcagcgtaa tgatctgcag cttcgtagta ctcccttccg gtacctactt 540
acaccttcca tgcaaaaaag tgttcaaaat aaaataaaga gccttaactg ggaagaaatg 600
gaaaaaagcc ggtgcattcc tgaaatagat gattccgagt tttgtatccg cattccggga 660
ggaggtatca caaaaacact ctatgatgaa agctgttcta aagaaatcca aatggcagtt 720
ctgctgaaat ttgtttcaga aggggacaac atcccagatg cattaggtct tgttgagtat 780
cttaatgagt ggcttcagat actcaaacca cttagcgatg accccacagt atctgcctca 840
cggtggaaaa taccaagttc ttggagatta ctctttggca gtggtcttcc ccctgcactt 900
ttctgatcta atttctgttt tataccttat acccaaaaca cttactacca acacagctgt 960
taaacattct atacaaaaaa attgtatgat ctggtattag gaaattactt tcacagtaaa 1020
tatcaaagaa aaaagattaa rggtctcttt gccatgcttt tcatcatatg caccaaatgt 1080
aaattttgta cctcggccgc gaccacgcta agccgaatt 1119

<210> 355
<211> 738
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (654)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (689)
<223> n equals a,t,g, or c

<400> 355
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cggaaattca tcaatttgaa tgaattcaca acctatggca gcgargaaag caccaaaccg 120
gcctccgtcc gggccctgct gtttgamatc tccttcctca tgctgtgcca tgtggcccag 180

acctatggtt caraggtgat tctgtccgag tcgcgcacag gagctgaggt gcccttcttc 240
gagacctgga tgcagacctg catgcctgag gagggcaaga tcctgaaccc tgaccacccc 300
tgcttccgcc ccgactccac caaagtggag tccctggtgg ccctgctcaa caactcctcg 360
gagatgaagc tagtgcagat gaagtggcat gaggcctgtc tcagcatctc agccgccatc 420
ttggaaatcc tcaatgcctg ggagaatggg gtcctggcct tcgagtccat ccagaaaatc 480
actgataaca tcaaagggaa ggtatgcagt ctggcggtgt gtgctgtggc ttggcttgtg 540
gcccacgtcc ggatgctggg gctggatgag cgtgagaagt cgctgcagat gatccgccag 600
ctggcagggc cactgtttag ygagaacacc ctgcagttct acaatgagag ggtngtgatc 660
atgaactcga tcctgggagc gcatgtgtnc cgacgtgctg cagcagacag ccacgcagga 720
ttcaagtttc cctccaac 738

<210> 356
<211> 1966
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (56)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (788)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1753)
<223> n equals a,t,g, or c

<400> 356
gaactagtct cgagtttttt ctgtctagct ccgaccggct gaggcggcgc ggcagnggag 60
ggacggcagt ctcgcrcggc tactgcagca ctggggtgtc agttgttggt ccgacccaga 120
acgcttcagt tctgctctgc aaggatatat aataactgat tggtgtgccc gtttaataaa 180
agaatatgga aactgaacag ccagaagaaa ccttccctaa cactgaaacc aatggtgaat 240
ttggtaaacg ccctgcagaa gatatggaag aggaacaagc atttaaaaga tctagaaaca 300
ctgatgagat ggttgaatta cgcattctgc ttcagagcaa gaatgctggg gcagtgattg 360
gaaaaggagg caagaatatt aaggctctcc gtacagacta caatgccagt gtttcagtcc 420
cagacagcag tggccccgag cgcatattga gtatcagtgc tgatattgaa acaattggag 480
aaattctgaa gaaaatcatc cctaccttgg aagagggcct gcagttgcca tcacccactg 540
caaccagcca gctcccgctc gaatctgatg ctgtggaatg cttaaattac caacactata 600
aaggaagtga ctttgactgc gagttgaggc tgttgattca tcagagtcta gcaggaggaa 660
ttattggggt caaaggtgct aaaatcaaag aacttcgaga gaacactcaa accaccatca 720
agcttttcca ggaatgctgt cctcattcca ctgacagagt tgttcttatt ggaggaaaac 780
ccgatagngt tgtagagtgc ataaagatca tccttgatct tatatctgag tctcccatca 840
aaggacgtgc acagccttat gatcccaatt tttacgatga aacctatgat tatggtggtt 900
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ggggtggtag cagagctcgg aatcttcctc ttcctccacc accaccacct agaggggggag 1140

acctcatggc ctatgacaga agagggagac ctggagaccg ttacgacggc atggttggtt 1200
tcagtgctga tgaaacttgg gactctgcaa tagatacatg gagcccatca gaatggcaga 1260
tggcttatga accacagggt ggctccggat atgattattc ctatgcaggg ggtcgtggct 1320
catatggtga tcttggtgga cctattatta ctacacaagt aactattccc aaagatttgg 1380
ctggatctat tattggcaaa ggtggtcagc ggattaaaca aatccgtcat gagtcgggag 1440
cttcgatcaa aattgatgag cctttagaag gatccgaaga tcggatcatt accattacag 1500
gaacacagga ccagatacag aatgcacagt atttgctgca gaacagtgta agcagtwtma 1560
gwttagcttt gtgttagctt atacatacta aaacctttaa aaagcttttc ttctcaattg 1620
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ctaatagttt gccttaattt ttcttctgct ttcttactaa aaacgargac attcaatact 1740
aatcttgcct ggnaggaagc cttgaaccaa gcaaacttct gcatttctct ggtgaaaact 1800
gctgccaaaa ccacttgtta aaaattgtac agagcctgta ggaaaatata gaaggttcca 1860
ttgggatgtt ggcctagttc tgtgtgggaa gacttagtgg attttgtttg tttttagata 1920
actaaatcgg ccaacaaatc accgttctgg cctatgggac cgggcc 1966

<210> 357
<211> 1562
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (260)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (262)
<223> n equals a,t,g, or c

<400> 357
taccccgccg cctgcngnac cggtccggaa ttcccgggtc gacccacgcg tccgcatgaa 60
atggaccaat actggggaat tggcagtctg gccagtggga taaatttgtt cacaaacagt 120
tttgagggcc cagttcttga tcacaggtat tatgcaggtg gatgctcccc gcattacatc 180
ctgaacacga ggtttaggaa gccctacaat gtggaaagct acacgccaca gacccaaggc 240
aaatacgaat tcatattaan anagtatgaa tcatactcag attttgaacg caatgtcaca 300
gagaaaatgg caagcaagtc tggtttcagt tttggtttta aaatacctgg aatatttgaa 360
cttggcatca gtagtcaaag tgatcgaggc aaacactata ttaggagaac caaacgattc 420
tctcatacta aaagcgtatt tctgcatgca cgctctgacc ttgaagtagc acattacaag 480
ctgaaaccca gaagcctcat gctccattac gagttccttc agagagttaa gcggctgccc 540
ctggagtaca gctacgggga atacagagat ctcttccgtg attttgggac ccactacatc 600

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gagagaggag attatactct taacaacgtc catgcctgtg ccaaaaatga ttttaaaatt 720
ggtggtgcca ttgaagaggt ctacgtcagt ctgggtgtgt ctgtaggcaa atgcagaggt 780
attctgaatg aaataaaaga cagaaacaag agggacacca tggtggagga cttggtggtc 840
ctggtacgag gaggggcaag tgagcacatc accaccctgg cataccagga gctgccgacg 900
gcggacctga tgcaggagtg gggagacgct gtgcagtaca acccagccat catcaaagtt 960
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gctccctgcc aaggaaatgg agtccctgtc ctgaaaggat cacgctgtga ctgcatctgt 1140
cctgttggat cccaaggcct agcctgtgag gtctcctatc ggaagaatac ccccattgat 1200
gggaagtgga attgctggtc aaattggtct tcatgctctg gaagacgtaa gacaagacaa 1260
aggcagtgta acaatccacc tcctcaaaat gggggtagcc cctgttcagg ccctgcttca 1320
gaaacacttg actgctccta gcagatgata cagcagtggg ctacatacaa tgagagccct 1380
gagccctcaa gaactcaygc cagctcagcc ctacaccagt ttccacctgg agttcatgca 1440
agggcaaaag gcagtgccat gcaagctgtt taaaataaag atgttacctt gtaaaatgca 1500
agttgattta aataaatact gagttaaagg ctttaaaaaa aaaaaaaaaa aaaggggggg 1560
cg 1562

<210> 358
<211> 1931
<212> DNA
<213> Homo sapiens

<400> 358
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ggcccgggtg acacttccgc ctgctataag agcagcggcc ctcggtgcct ccttcctgac 120
ctcgcaccca gctcggagcc cggagcgtgc ctcggcggcc tgtcggtttt caccatggag 180
cagctgagct cagcaaacac ccgcttcgcc ttggacctgt tcctggcgtt gagtgagaac 240
aatccggctg gaaacatctt catctctccc ttcagcattt catctgctat ggccatggtt 300
tttctgggga ccagaggtaa cacggcagca cagctgtcca agactttcca tttcaacacg 360
gttgaagagg ttcattcaag attccagagt ctgaatgctg atatcaacaa acgtggagcg 420
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gagttcttgg tttcgactca gaaaacatat ggtgctgacc tggccagtgt ggattttcag 540
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aaaattccgg aactgttggc ttcgggcatg gttgataaca tgaccaaact tgtgctagta 660
aatgccatct atttcaaggg aaactggaag gataaattca tgaaagaagc cacgacgaat 720
gcaccattca gattgaataa gaaagacaga aaaactgtga aaatgatgta tcagaagaaa 780
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ycttttttac attgaaaaaa atccagtggt tgcttttgaa tgcatcaagt aaagaagaag 1560
aaaagaatac atccgatgcg tagattcttg accatgtagt aatctataaa attgctatat 1620

cctcctgata gccatgggaa aacatgataa gatggtcatt tattttgcag ttagaatttt 1680
ggaagccaca aaatagacag acaccctgac tgttgaaggg aggtttaaaa acagatattc 1740
aattgaaatg taagagagca ccccaattga gagcccaggt tacgaagaca agcttgcctc 1800
gcctgacttt tctgtccctt gttctgcagg attagtattc tgttacagac ctctagtttt 1860
tagactcttc aattaaaggg ccaatggtta taacctgcaa aaaaaaaaaa aaaaaaaaaa 1920
aaaaaaaaaa a 1931

<210> 359
<211> 869
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (869)
<223> n equals a,t,g, or c

<400> 359
gctctggcgg gcataccagc gggccctggc cgctcacccg tggaaagtac aggtyctgac 60
agctgggccc tgtggtagga ggctggtaca aggttttgga tcggttcatc cctggcacca 120
ccaaagtgga tgcactgaag aagatgttgt tggatcaggg gggctttgcc ccgtgttttc 180
taggctgctt tctcccactg gtaggggcac ttaatggact gtcagcccag gacaactggc 240
caaactacag cgggattatc ctgatgccct tatcaccaac tactatctat ggcctgctgt 300
gcakttagcc aacttctacc tggtcccccт tcattacagg ttggccgttg tccaatgtgt 360
tgctgttatc tggaactcct acctgtcctg gaaggcacat cggctctaag cctgcctcac 420
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aaagtgggca taccagtttc cacggggttg ggttgccggt cagagcttaa gaggactagc 540
accctgcaat gcccctcttc actctaaaat gtacactgac tgctttagag cccttgataa 600
tagtcttatt cccaccacat actaggcact ccataaatat ctgttgaacc ttcatgacct 660
tatcaacttt acacccatat cccagcaaat gccactcatc cccactcttc atagacacat 720
ttgttactct aaccctgcct aggcttcttg tagctccagc tctttagaga ctcccggaac 780
cctttatatg gtgcctcagt aaatatgtta ttaaatatgt aatccggaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaan 869

<210> 360
<211> 561
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (521)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (525)
<223> n equals a,t,g, or c

<220>
<221> misc feature

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<222> (560)
<223> n equals a,t,g, or c

<400> 360
ggcacgagag actccagccg ccaggggagc gcgtgccgtt cttgcctctc tggcctgcgc 60
ctcctgagcc gagtagatat cccggagttc cgcgcggcgc cagcccttcc gccacggccg 120
tctctggaga gcagcagcca tggccctacg ctaccctatg gccgtgggcc tcaacaaggg 180
ccacaaagtg accaagaacg tgagcaagcc caggcacagc cgacgccgcg ggcgtctgac 240
caaacacacc aagttcgtgc gggacatgat tcgggaggtg tgtggctttg ccccgtacga 300
gcggcgcgcc atggagttac tgaaggtctc caaggacaaa cgggccctca aatttatcaa 360
gaaaagggtg gggacgcaca tccgcgccaa gaggaagcgg gaggagctga gcaacgtact 420
ggccgccatg aggaaagctg ctgccaagaa agactgagcc cctcccctgc cctctccctg 480
aaataaagaa cagcttgaca gaaaaaaaaa aaaaaaaaaa ntcgnggggg ggcccggtac 540
ccattcgccc tawaggggggn g                                          561

<210> 361
<211> 1680
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (33)
<223> n equals a,t,g, or c

<400> 361
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acccagagcc tgctcttggg aacagccaga gtaagattgg aacccagact tgcaagccag 120
cgctgtttgc attaaaaggg tgggtgagtc aggacccctg gctcargagc cgyctctcct 180
aaaagagggt ttcaaggcca aatgggtttg tcaacggtgc tgtctccctt tcttggagat 240
gctcattagc ttatcaaaga ctgagaagtc ccgctgttac agaaataatt tagtttgctg 300
tattaactgc tcctgggcct ggagcagtat tcccacctta agattcccag catccctgtg 360
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ttgggggcg ccttctcttt cttccccagg gaattctcta gcagagggag gggacccacc 480
ccagtgagga agtagattgc tgcctctagc cagagacctg aactggggaa tttgaacatt 540
cctttacatt gttggagaaa tgaagccaaa gttattcaga tggttttccc aggctaaagg 600
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taccaaagag aagaaccact ctctggcgct ggggtgacct gctggctggg cctgtaaggt 720
ttccatgttg ctgaggccat ggagattccc agagctggtc acaccgaccg ctctcagggc 780
ccgctgccct gggctggcaa caccattctg gccttggcct gcagaagctt tcagagtctt 840
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accatgcaat ggaagagccc agatgggtga agattgattt tgccttaact caagagaatt 960
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cctctctggg caccaggact cagtccagcc caagactact ctgggcagct cccatcccag 1500
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tctggggcca tttgcagact caggaaagga tttctacagt gttctataaa agccaaaaga 1560
gagagtgggt ttgggaagag tgagggtggt tggggagagg ggaccgatgt gcctcattgt 1620
ttagtggtga ttacaaatat gcttttctgg ataaagtttg gttgtttgct cttggaaaaa 1680

<210> 362
<211> 740
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (591)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (709)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (718)
<223> n equals a,t,g, or c

<400> 362
cagaaacaaa caaaaaggca gctgggttgt cactgatggg cagcatttga gcctgccaca 60
ctggcctgga agtttccctt ccagtctgga ttttgtctgc tccttccttc cccctcaccc 120
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<211> 1324
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<400> 363
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<211> 2853
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<213> Homo sapiens

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<210> 365
<211> 1837
<212> DNA
<213> Homo sapiens

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<211> 1823
<212> DNA
<213> Homo sapiens

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<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
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<222> (30)
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<211> 1117
<212> DNA
<213> Homo sapiens

<400> 368
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<210> 369
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<212> DNA
<213> Homo sapiens

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<222> (24)
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<222> (35)
<223> n equals a,t,g, or c

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<222> (36)
<223> n equals a,t,g, or c

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<213> Homo sapiens

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<222> (1937)
<223> n equals a,t,g, or c

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<213> Homo sapiens

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<223> n equals a,t,g, or c

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<213> Homo sapiens

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<211> 464
<212> DNA
<213> Homo sapiens

<400> 373

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<222> (886)
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<211> 1874
<212> DNA
<213> Homo sapiens

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<212> DNA
<213> Homo sapiens

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<222> (1997)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2012)
<223> n equals a,t,g, or c

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<210> 377
<211> 818
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (818)
<223> n equals a,t,g, or c

<400> 377
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gggccgtcat ggccatgaag gggaagaact gtgtggccat cgctgcagac aggcgcttcg 180
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tccggctgaa cctgtatgag ttgaaggaag gtcggcagat caaaccttat accctcatga 360
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tgtgtgagtc cctctgggag cccaacatgg atccggatca cctgtttgaa accatctccc 600
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tcatcgagaa ggacaaaatc accaccagga cactgaaggc ccgaatggac taaccctgtt 720
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aaaaaaaaaa accccggggg gggcccggaa ccaaattn 818

<210> 378

<211> 2565
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1508)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2565)
<223> n equals a,t,g, or c

<400> 378
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taagaagatt gctgtatcaa ctcaagaaag cagtaacttc actgtctttg tattttgaat 240
tgcaacaaca actttgatat caacaatgaa gcaatgatat ctaagaacma aagartattt 300
gccaacagtc atcataatat caagtgattg tataagcaga aacaagctgt cacagacctg 360
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gtaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaggg ggggn 2565

<210> 379
<211> 1680
<212> DNA
<213> Homo sapiens

<400> 379
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aatagttaca cacaagaggg aaactggaag ccaaacactg tacagtattg tgtagaaagt 180
cacctcccta ctccttttat tttacatgag tgctgatgtg ttttggcaga tgagctttca 240
gctgaggcct gatggaaatt gagataacct gcaaagacat aacagtattt atgagttata 300
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agttgaagtt ggtgaagaca ttcatgattt aaacaccaga tcctgaaagg ggttaaatct 480
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<210> 380
<211> 1267
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (214)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1165)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1255)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1262)
<223> n equals a,t,g, or c

<400> 380
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aatacattgt attaatacca aagtgtttgg tcattttaag aatctggaat gcttgctgta 120
atgtatatgg ctttactcaa gcaratctca tctcatgaca ggcagccacg tctcaacatg 180
ggtaaggggt gggggtggag gggaatgtgt gcancgtttt tacctaggca ccatcattta 240
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atacatatat gagttgccta tatttgctat tcaaaatttt gtaaatatgc aaatcagctt 480
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ataaccatga atacacttac agttaggatt tgtggtaagg tacctctcaa cattaccaaa 600
atcatttctt tagagggaag gaataatcat tcaaatgaac tttaaaaaag caaatttcat 660
gcactgatta aaataggatt attttaarta caaaaggcat tttatatgaa ttataaactg 720
aagagcttaa agatagttac aaaatacaaa agttcaacct cttacaataa gctaaacgca 780
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anaaatt                                                           1267

<210> 381
<211> 1031
<212> DNA
<213> Homo sapiens
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<220>
<221> misc feature
<222> (1015)
<223> n equals a,t,g, or c

<400> 381
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gccactggaa aacctttcag gccgccccca tcagtgggct ccaaagtaaa tggctgaaaa 120
caaaaatgtt tcacttccta acagttttcc tttttccact gtgtgactga aagctcctat 180
atcattttat atttctgaat ctataaaaca aaacaaacaa gcctgamagt gtctggarga 240
rccaaaggtg gcctccctgt ccccaaatat attggctata tgagagtaat tttacccctc 300
tacgtaccta aaggcaccca gttcactagt ctgtggggtc ctggagcctg tctcttcttt 360
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aaccagccac ggagacgctg gcccacgggc tcggcctgcg gtgtggcctg ctttgctcac 480
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<210> 382
<211> 1597
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1577)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1579)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1597)
<223> n equals a,t,g, or c

<400> 382
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aaggcaccaa cacctaccta gtggggaccg gccccaggag aatcctcatt gacactggag 240
aaccagcaat tccagaatac atcagctgtt taaagcaggc tctaactgaa tttaacacag 300
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caatccagga aattgtagtg actcactggc accgagatca ttctggaggc ataggagata 360
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agagagaaga aattatagga aatggagagc aacaatatgt ttatctgaaa gatggagatg 480
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aaaaaaaaaa aaaaaangnc cccggggggg ggccggn 1597

<210> 383
<211> 175
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (95)
<223> n equals a,t,g, or c

<400> 383
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ccaaacatct actacaaggt atgagggctc ctctnacgtg gctatcctga atccagccct 120
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<210> 384
<211> 2171
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2166)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2170)

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<223> n equals a,t,g, or c

<400> 384
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cggacttcct gggaaagtgg ggaaggccaa ggggaaaaaa acacaaatgg ctgaagtttt 180
gccttctccg cgtggtcaaa gagtcattcc acgaataacc atagaaatga aagcagaggc 240
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<210> 385
<211> 2364
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c
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<211> 2864
<212> DNA
<213> Homo sapiens

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<210> 387
<211> 2683
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2649)
<223> n equals a,t,g, or c

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<210> 388
<211> 1446
<212> DNA
<213> Homo sapiens

<220>
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<222> (35)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (37)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (57)
<223> n equals a,t,g, or c

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aaaaaa 1446

<210> 389
<211> 723
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (705)
<223> n equals a,t,g, or c

<400> 389
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ggg 723

<210> 390
<211> 1046
<212> DNA
<213> Homo sapiens

<400> 390
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